

**Name and Address**

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NR26 8HE  
ENGLAND**

**Year of Manufacture: .....**

**Model Type: COMPACT 50 HYDRAULIC STEELWORKER**

**Serial Number: .....**

**Weight of Machine: 1,320 KG NET**

## **KINGSLAND COMPACT 50 HYDRAULIC STEELWORKER**

This Kingsland Steelworker has been developed to give you, the user, a reliable long service - low maintenance machine tool.

These machines are capable of performing five basic functions, with the facility to add various additional tooling arrangements to complement the fully universal aspects of the Steelworker.

These instructions give general guide lines for the use of the Steelworker, commissioning, operating and maintenance, and should be carefully studied by the installation engineer and operator before the machine is put into operation.

Any assistance regarding the machines, should first be sought from the supplier, or alternatively from the manufacturer:

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## **1. SAFETY NOTES FOR KINGSLAND STEELWORKERS**

In this manual particular references are made regarding aspects of safety and the notes below are intended as a summary to highlight the main areas for your attention.

The machine should be positioned so that the operator has sufficient room to work having regard for the long lengths of material which may be punched or cropped. Electrical supply should be by overhead cable to avoid possible damage.

It should be considered if additional equipment will be required to safely handle long or heavy items being processed.

Any person who will use the machine should be given adequate instruction on the operation and safety aspects of the machine. Extra copies of this manual are available from the manufacturer.

In addition it should be established which persons shall be responsible for the changing and setting of tools and blades and these persons given a more detailed instruction.

Kingsland machines are supplied complete with various guards and barriers as standard equipment which provides a generally accepted level of guarding when the machine is used for the purpose for which it was designed.

1. The main areas of deviation from design criteria would probably be:
2. The use of materials other than mild steel (45 kg/mm<sup>2</sup>)
3. The incorrect use of material hold-downs
4. The punching, cropping or notching of small items  
(as this would encourage the operator place fingers or hands into danger area).

If at any time additional tooling or equipment is fitted to the machine the question of adequate guarding must be reviewed and the advice of the manufacturer sought if necessary.

All maintenance should be carried out by suitably qualified personnel and particular attention must be paid to the correct setting and alignment of punches and dies, blades and other tools.

## **2. BRIEF SPECIFICATIONS**

The machine has been developed to perform five basic functions:  
Punching, Flat Bar Shearing, Notching, Angle and Section Cutting.

### **MEASUREMENTS**

Length x Width x Height	1,520 x 590 x 1,700 (+100mm lifting eye)
Die Height from floor	940 [mm]
Shear Support from floor	940 [mm]
Angle Support from floor	1,140 [mm]
Notch Height from floor	940 [mm]

### **CAPACITIES**

(Full details, see page 26-27.)

Punching*	<b>38</b> dia x 9mm or 23dia x <b>15</b> mm
Shearing	200 x 15mm or 300 x 13mm
Angle Cutting	100 x 10mm
Section Cutting	35 mm Round, 30mm Square
Notching	10 mm Thickness

(All capacities are based on materials of 45 kg/mm<sup>2</sup> Tensile Strength.)

Punch Pressure	500 kN or 50 Tons
*Standard Size Fitment Punch & Die	22 mm

### **STANDARD EQUIPMENT SUPPLIED WITH MACHINE**

Punch Retaining Ring	2557
Punch Adaptors	9035 & 9036
Punch & Die (1 set)	9001 - 22 & 9023 - 23
Punch Bolster	4221
Shear Blade (1 set)	3409 & 3309
Angle Blades (1 set)	3549 & 3550 (Arm), 3548 & 3547 (Body)
Section Blades (1 pair)	3427 & 3428
Notch Punch & Dies (1 set)	3310, 3537 (2) & 3536
Notch Bolster	4215

### **Tool Kit comprising:**

- 'C' spanner Part no. L220/2005 (80 / 90)
- Punch Location Key Part no. L805/2700
- 12mm star lock washer (6 off) Part no. K605/7905
- 19 and 24mm Open-Ended Spanner
- Allen Key 4, 5, 6, 8, 10, 12, 14, 17mm

### **3. BRIEF DESCRIPTION OF MACHINE**

#### **PUNCHING (FOR DETAILS SEE PAGES 8-15)**

The large punch bed area is designed to give a very wide range of punching applications; with the available optional tooling - large holes of any shape up to diameter/square as shown in the capacity chart can be punched; or in the overhang position, flanges of channel or joist can be punched up to diameter/diagonal of 38mm in maximum capacity (refer to page 26-27).

Additional tooling in this versatile work station can provide, corner notching, tube notching louvring and general die-set work.

#### **SHEARING** (For details see page 16-17)

The shearing unit is fitted with a simple robust hold-down which is adjustable to any thickness of material within the cutting capacity of the machine. A shear feed table with adjustable guides is fitted to allow the accurate feeding of materials. The guide can be adjusted to allow mitre cutting up to 45 degrees for flat bars or to trim the flanges of angle sections previously cut at the angle cutting station.

#### **ANGLE CUTTING** (For details see page 18-21)

This station provides large capacity angle cutting at 90 degrees and lighter angle cutting at 45 degrees. Angles between 45 and 90 degrees can be achieved by first cutting at 90 degrees and then flange trimming to the required angle in the shearing station.

The hold-down supports the material thus ensuring a true cut.

#### **SECTION CUTTING** (For details see pages 22-23)

The machines are fitted as standard with blades for cutting round and square bars. With extra equipment, the machines are able to cut, in this aperture, Channels, Joists and Tee Sections. The blades are retained by simple clamps, allowing easy changes without the need for elaborate setting.

#### **NOTCHING** (For details see page 24-25)

The notching station is fitted as standard with a rectangular unit and notch table with adjustable back stops allowing repetitive positioning. Extra equipment is available for narrow widths or vee notching of angles up to 90 degrees vee; units are also available for bar end shaping applications and bending up to 150mm long

## **4. FURTHER INFORMATION**

### **SYSTEM PRESSURE**

To check any operational loadings, a pressure gauge can be fitted at the manifold position. The max. system pressure has been set at the works to 235 bar (3,400 P. S. I.) which is below the max. continuous working pressure of the pump, thereby giving increased reliability.

### **CLEANING**

On arrival, all anti-corrosion lacquer should be removed from the machined bright parts with petroleum solvent. When the machine is operational, all visible working parts should be regularly cleaned of foreign matter, thus preventing excessive wear and possible failure.

### **LIFTING**

The machine is supplied with a lifting eye, mounted on top of the machine. All lifting and manoeuvring should be carried out using this eye along with a suitably rated chain or sling. The eye can be removed if desired after final siting of the machine but hole should be blanked off.

**DO NOT USE SLINGS UNDER MACHINE!**

## **5. INSTALLING**

Locate the machine on a solid foundation allowing sufficient area all round for easy working and maintenance. The machine may be used free standing, but bolting to the foundation is recommended. With the machine mounted directly on the floor - this gives a comfortable working height.

### **ELECTRICAL SUPPLY**

Input wires should arrive at the machine via suitably protected underground supply directly into the electrics box in the base of the machine. As an alternative by overhead supply to the top of the machine and routed inside the top guard and hydraulic pipe trunking to the electrics box. A 30 amp isolating switch, fuse and appropriate cable should be used for mains supply connection. The circuit provides protection against sustained over-load and phase failure. Should the machine cut out during an operation or whilst running, the cause of the problem should be investigated to prevent re-occurrence.

### **IMPORTANT**

**Motor rotation MUST be as arrow on motor fan end cover!**

**This machine will not operate if the motor is running in the wrong direction. It must be stressed however that the motor must not be allowed to run in the wrong direction for more than a few seconds, as this will cause seizure of the pump. To check motor direction start and stop motor with foot on footswitch if machine does not operate reverse two of the incoming 3 phase connections.**



### SAFETY POINTS

- All adjustments, setting, change of tooling and maintenance must be carried out by a suitable qualified engineer in accordance with the manufacturers instructions.
- Remove off-cuts, slugs and any other waste from around the machine before leaving the work station.
- The operator should check all tooling is in good condition before operating machine.
- All stations should be checked for obstructions.
- Heavy work should be supported by a sound work steady.
- The machine should never be left running while unattended.
- When leaving, the machine **MUST** be switched off.

### OVERLOADING

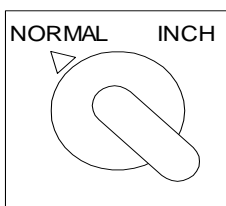
In the event of an accidental overload to the hydraulic circuit, the oil will be diverted direct back to the tank via a relief valve, until the overload condition is removed.

IT MUST BE STRESSED HOWEVER IT IS NOT ADVISABLE TO EXCEED THE CAPACITY OF THE MACHINE USING RELIEF VALVE AS A SAFETY VALVE.

### WARNINGS AND DANGERS

Any point of the machine painted **YELLOW** should be treated as a danger area. Operators should be instructed not to extend any finger or limbs into or beyond the vicinity of the warning labels. Any guards or hold downs removed for maintenance or adjustments **MUST** be replaced before the machine is put back in service.

### OPERATING MODE SWITCH



The Operating Mode Switch has two positions - **NORMAL** and **INCH**. With the switch set to **INCH** all work stations are in the Inching Mode.

### INCHING POSITION

In Inching position the arm will travel down when footswitch is fully depressed. The arm will remain in any position when foot is removed. Turn switch to **NORMAL** to return arm to top of stroke. All tool setting and adjusting and setting of stroke limit switches should be done in the Inching position.

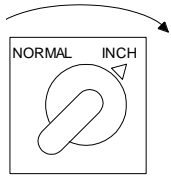
### NORMAL OPERATING

With Selector Switch to **NORMAL** the arm will travel down at operating speed when footswitch is fully depressed and will return to top of stroke when foot is completely removed.

The footswitch does however have three “positions” giving the very useful facility that after bringing the arm down by full depression of switch, the arm may be held in any position of the stroke by raising the foot to the mid-position. Remove foot and arm will return to top position.

### PUNCH AND DIE ALIGNMENT

Should be checked before using, and **MUST** be checked after punch and die changes have been made.



To check alignment switch mode of operation **INCH**, then inch the punch down by fully depressing the footswitch. Care must be taken as the punch approaches the die, if misalignment is apparent remove foot from switch.

To align punch and die release bolster fixing screws, operate the foot switch with care, aligning the bolster containing the die to the punch, the punch will stay in the down position. Centralise the die clearance around the punch, clamp the bolster in position, tighten die retaining screw, check die maintains in the central position after clamping. Return punch to top position by switching back to normal position.

## **6. PUNCHING STATION**

### GENERAL DESCRIPTION

The punch station is a particularly well equipped station. It offers many features normally associated with much larger machines.

The large punch bed area is designed to give a very wide range of punching applications, including overhang work in small channel sections. The punch table is particularly useful when the side and back stops are set for small repetitive work. This coupled with a finely adjusted stroke length gives a very productive machine. The table is assembled in two parts of which the front is removable for flange punching.

The punch is retained by means of locking ring part 2557, the punch depending on its size may use one of the two adaptors supplied. The die is retained in the bolster by a set screw, ensure the screw locates correctly on the machined flat on the die when shaped punches and dies are being aligned.

The punch stripper plate must be correctly adjusted allowing sufficient clearance for placing and removal of material, but must NOT restrict the punch stroke, ensure the bottom stroke limit switch is correctly adjusted.

Punch holes with sufficient material around the hole so that contact will be made on both sides of the stripper plate. Stripping forces can be severe and unbalanced stripping forces, due to contact on one side of the stripper, may cause punch breakages.

Additional tooling in this versatile work station can provide, corner notching, tube notching, louvring and general die-set work.

**WHEN ORDERING REPLACEMENT PUNCHES AND DIES, ALWAYS  
QUOTE - MODEL, TYPE AND SERIAL NUMBER OF MACHINE.**

**PUNCH TOOLING**

The Punch and Die should be checked for alignment, prior to punching any material. Standard size fitted 22mm, unless specifically ordered otherwise.

**TOOLING CHANGES**

**Punch:** To change punch, unscrew locking ring using 'C' Spanner from tool kit, replace punch and retighten locking ring. Adaptors are supplied to suit various punch head sizes.

**Die:** To change die, slacken set screw in side of bolster, remove die and replace with new die, retighten set screw.

After replacing punches and dies, it is important that they are correctly aligned. See page 6 for alignment procedure under the heading 'Safety Points'. Extra care must be taken when fitting square or shaped punches that they are correctly aligned before operating machine.

**PUNCH TOOLING - GENERAL GUIDES**

1. The punch stripper plate must be adjusted correctly with sufficient clearance to allow positioning and removal of the material being punched.
2. Punch holes with sufficient material around the hole so contact is made on both sides of the stripper plate. Stripping forces can be severe. Unbalanced stripping forces may cause punch breakage.
3. Liberal oiling of the punch will considerably lengthen the life of the punch and die and also help reduce the stripping forces.
4. The quality of the hole (or blank) is an immediate indication of the condition of the punch and die.
5. Do not punch material thicker than the punch diameter, this overloads the punch and can result in breakage.
6. Punch full and complete holes, do not punch partial holes unless tooling is specifically designed to do so.
7. When punching small items (i.e. small pieces of plate, bar etc) these items MUST be placed and extracted with suitable handling aids, extra guarding may be required too ensure operator safety.
8. Stay within the rated capacity of the machine.

**PUNCH AND DIE LUBRICATION**

It is recommended that one of the following oils is applied by brush to the punch and die or both sides of the material being punched.

SHELL	- GARIA 927
B. P.	- SERVORA 68
CASTROL	- ILOBROACH 219
DUCKHAMS	- ADFORNOL EP7

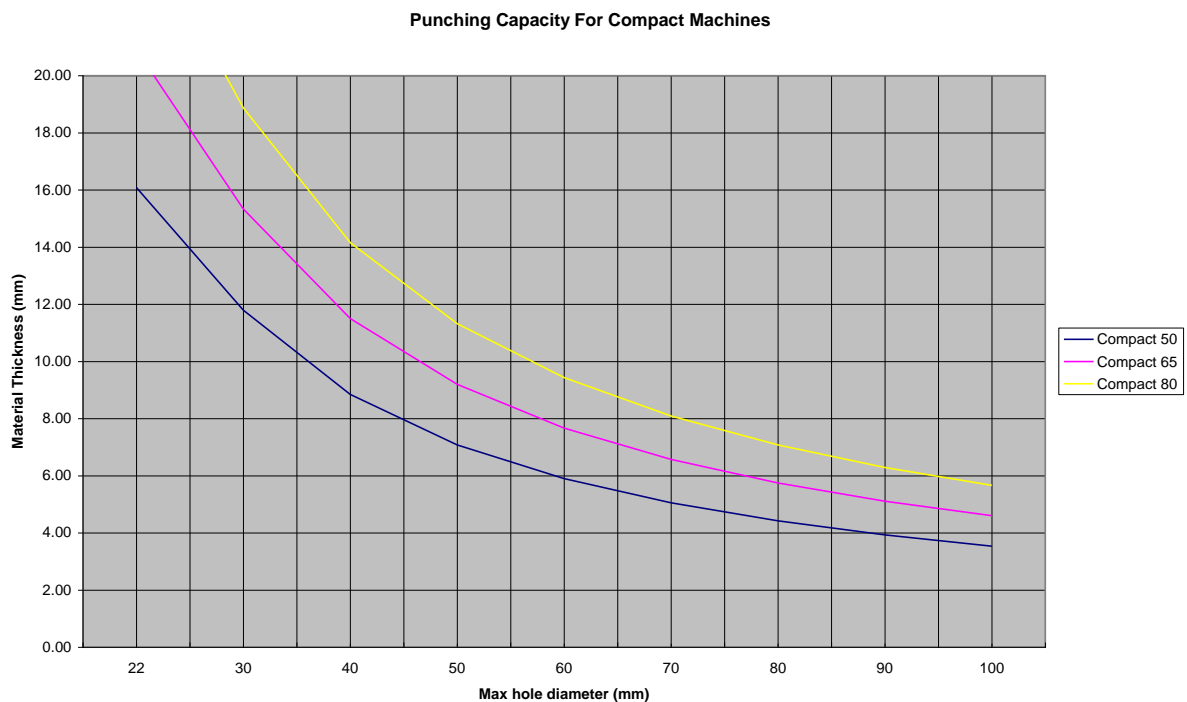
**Die clearance: It is normal practice to aim for a clearance of 10% material thickness.**

Whether clearance is added to the size of the die or deducted from the size of the punch, depends on the nature of the work. When holes of a given size are required the punch is made to size and the die is made larger. Conversely, when blanks of a given size are required the die is made to size and the punch smaller.

Special clearance dies for thin sheet and plate punching, or size dies and special clearance punches can be supplied to order.

**PUNCHING CAPACITY**

The graph shows the punch capacity curves for the Compact range of machines. As an example it can be seen to punch material 16mm thick, the maximum diameter is 22mm on the Compact 50 and the maximum diameter on the Compact 65 is 28mm. As an alternative it is possible to calculate a capacity by using the machine constant this graph is for mild steel.



If you want to calculate the tonnage of a hole you wish to punch the following formula is used:

$$\frac{(\text{Perimeter} \times \text{Material Thickness} \times \text{Tensile strength of the material being punched})}{1000}$$

Tensile strength(kg/mm<sup>2</sup>)

Mild steel 45

Stainless Steel 70

Aluminium 30

**Note:**

All capacities are based on materials to be punched having a tensile strength of 45 kg/mm<sup>2</sup>.

Always keep within the rated capacity of the machine and never attempt to punch a hole smaller in diameter than the thickness of material being punched.

**1. Example: Round Punch**

You are going to work with a material of 8mm thickness on a Compact 50 machine.

You wish to punch a 43mm diameter hole does my machine have enough capacity.

$$\text{perimeter} = 43 \times \pi (3.14)$$

$$\text{perimeter} = 135.02$$

$$\frac{135.02 \times 8 \times 45}{1000} = 48.6 \text{ tonnes}$$

So yes my machine has the capacity tonnage wise, but I will need a large hole attachment as the largest hole my machine will punch is 38mm diameter

**2. Example: Square Punch**

Your punch is an 18mm square and you are punching 10mm stainless steel does my machine have enough capacity.

$$\text{perimeter} = 18 \times 4$$

$$\text{perimeter} = 72$$

$$\frac{72 \times 10 \times 70}{1000} = 50.5 \text{ tonnes}$$

So no my machine does not have enough capacity, 9mm would be the maximum we could punch.

**3. Example: Elongated Punch**

Your punch is an 10mm wide x 25mm long with round ends and you are punching 10mm mild steel does my machine have enough capacity.

$$\text{perimeter} = 10 \times 3.14 (\text{round end} \times \pi) + (\text{straight edges}) (25-10) \times 2$$

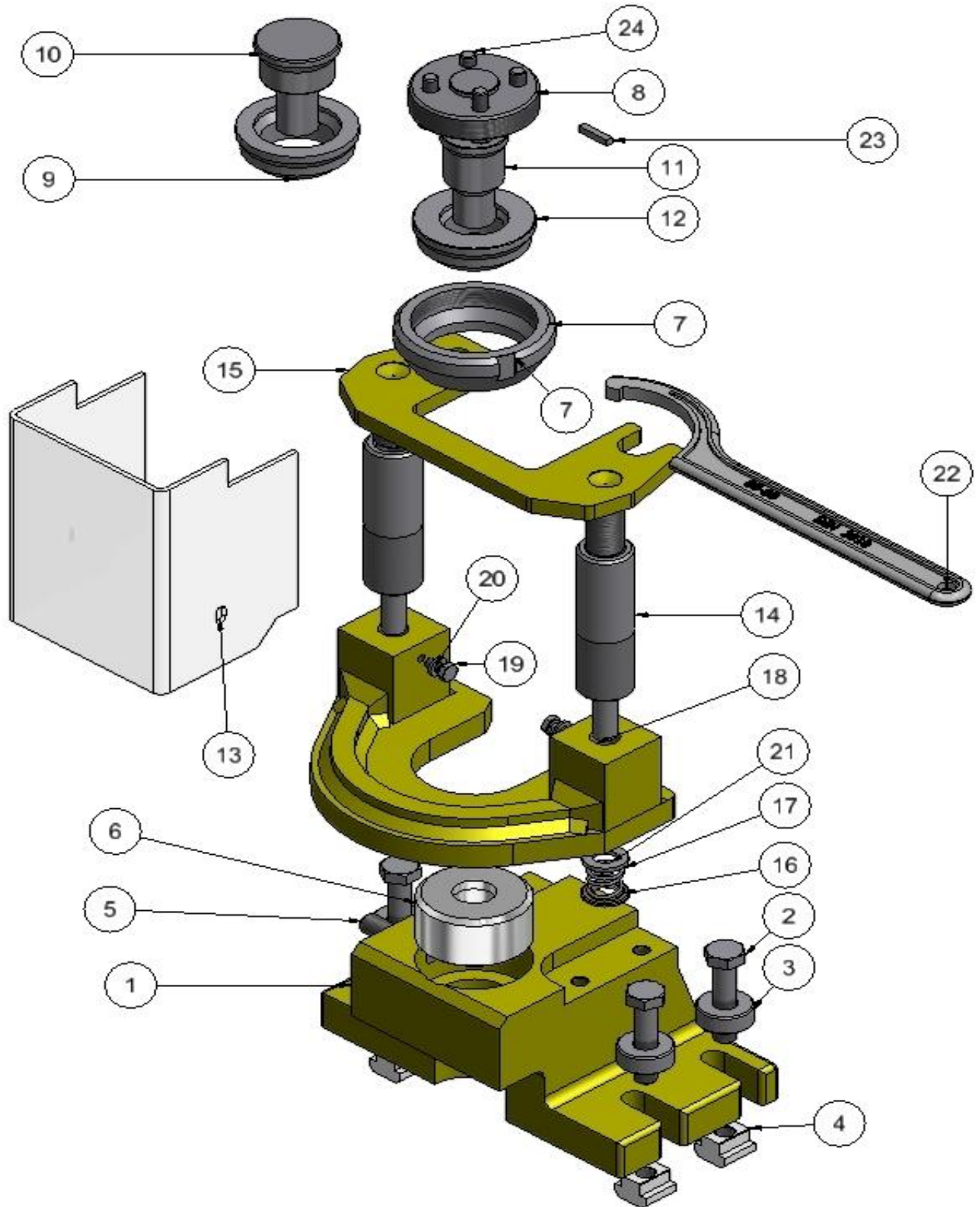
$$\text{perimeter} = 61.4$$

$$\frac{61.4 \times 10 \times 45}{1000} = 27.6 \text{ tonnes}$$

Please Note:

**DANGEROUS PRACTICE:  
DO NOT ATTEMPT TO PUNCH MATERIAL  
THICKER THAN THE PUNCH DIAMETER!**

### STANDARD PUNCH TOOLING



In the following table you can find a list of the standard punch tooling for the Compact 50. It includes which equipment is supplied with the machine.  
The standard punch tooling includes 22mm punch (9004) and die (9023).  
Other punches and dies are available on request.

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	4221	PUNCH BOLSTER
2	4	K605/3736	M12x55 HT BOLT DIN 931
3	4	4443	12mm BOLSTER WASHER
4	4	K605/2912	M12 * 14 TEE NUT
5	1	K605/5531	S S S CUP M12 x 25 DIN 916
6	1	9023-23	23MM ROUND DIE
7	1	2557	RETAINING RING
8	1	2093	RAM PRESSURE PLATE
9	1	9036	PUNCH ADAPTOR FOR 9004
10	1	9004	ROUND PUNCH
11	1	9001	ROUND PUNCH
12	1	9035	PUNCH ADAPTOR
13	1	4128	PUNCH STRIPPER GUARD
14	2	2407	STRIPPER PILLAR
15	1	3335	STRIPPER TOP PLATE WELD
16	2	K605/7905	12MM STARLOCK WASHER
17	2	K705/3009	STRIPPER PILLAR SPRING
18	1	3336	STRIPPER HEAD
19	2	K605/6908	M6 x 12 HEX HEAD BOLT DIN 933
20	2	K605/7305	M6 WASHER DIN 125A
21	2	K605/7313	M12 WASHER DIN125A
22	1	L220/2005	C-SPANNER
23	1	L805/2700	PUNCH LOCATION KEY
24	4	K605/5324	Cap Screw M8 x 25

### **LARGE HOLE PUNCHING**

Extra equipment available for punching up to 110mm dia.

This unit comprises: Special ram pressure plate

Adaptors Retaining Ring

Bolster with die holder plates

Large hole stripper head

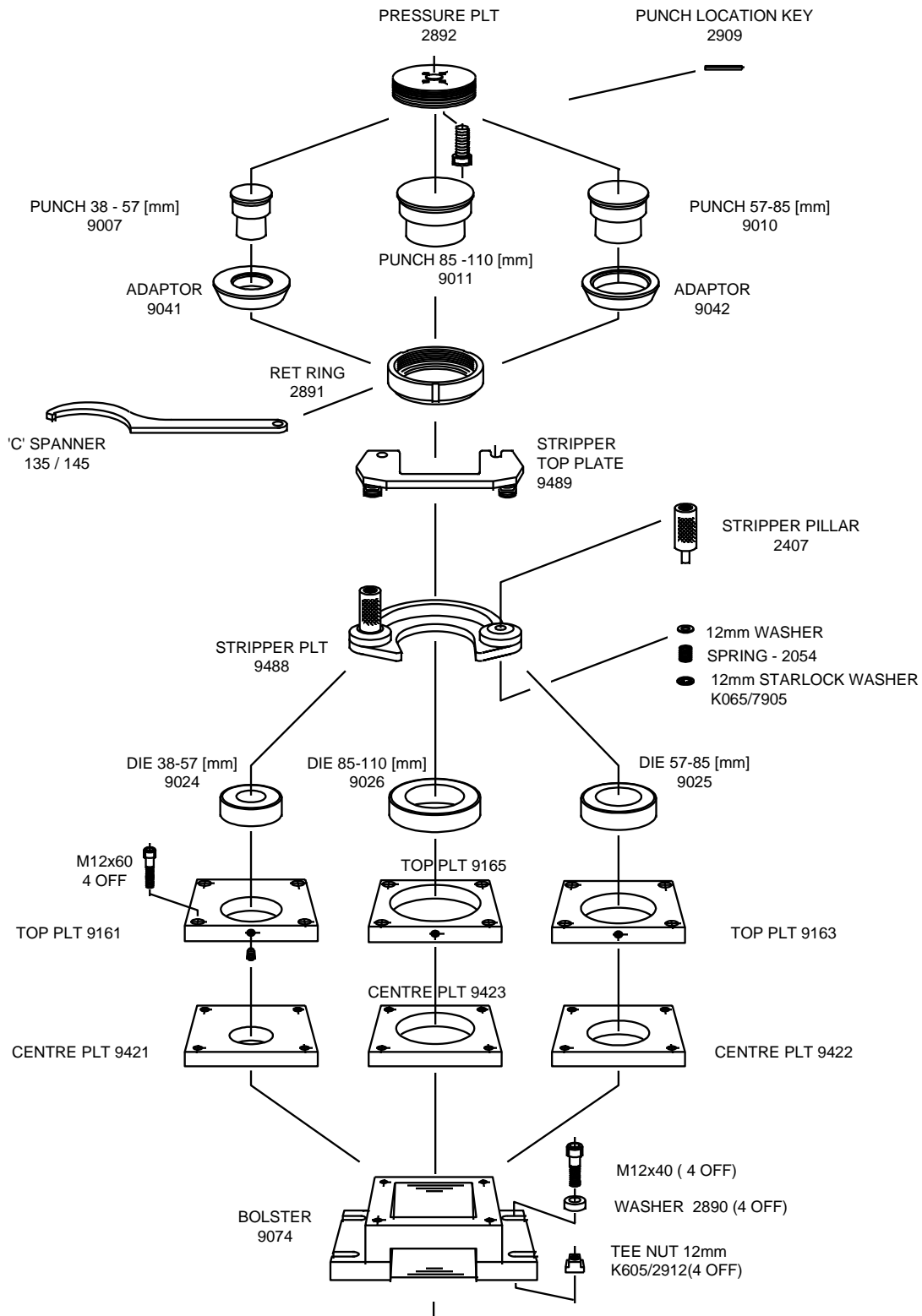
Punch and die sets available for this unit -

For hole sizes up to - 57mm dia

85mm dia

110mm dia

**LARGE HOLE PUNCHING (9487)**

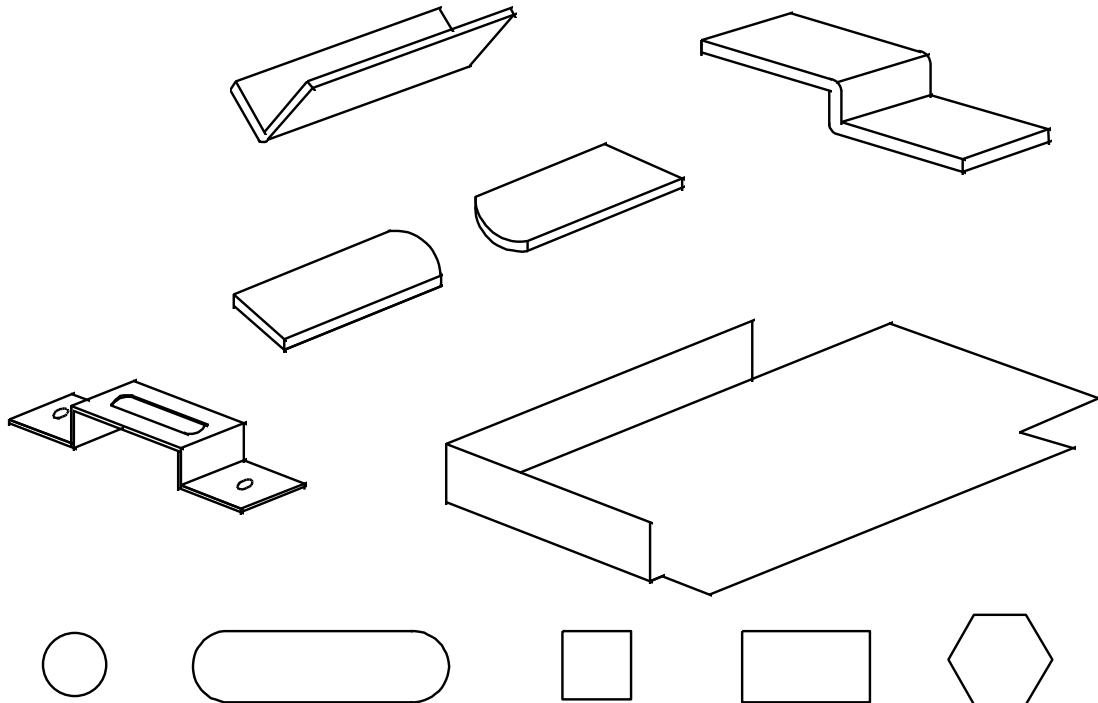


NOTE: PUNCHES & DIES ARE NOT SUPPLIED WITH UNIT



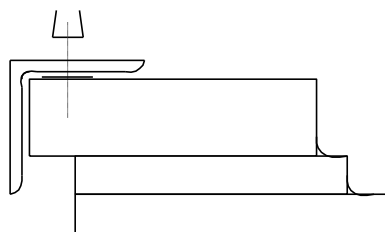
**TYPICAL APPLICATIONS**

( achieved with special tooling at punch station )

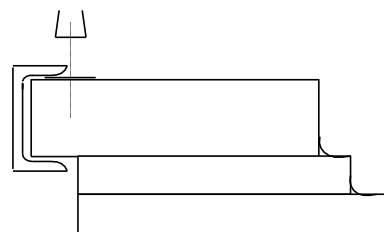
**FLANGE PUNCHING**

The standard bolster (4221) can accommodate flange punching in small sections. To achieve the correct back-mark it will be necessary to use an eccentric die so as to off-set the bolster.

The front portion of the punch table must be removed and the bolster re-positioned for flange punching.



**NORMAL FLANGE  
PUNCHING**



**ECCENTRIC FLANGE  
PUNCHING**

## 7. SHEARING STATION

### DESCRIPTION

The shearing unit is fitted with a simple robust hold-down which is adjustable to any thickness of material within the cutting capacity of the machine. A shear feed table with adjustable guides is fitted to allow the accurate feeding of materials. The guide can be adjusted to allow mitre cutting up to 45 degrees for flat bars or to trim the flanges of angle sections previously cut at the angle cutting station.

The standard shear blades as fitted permit the bottom blade to be turned four times giving new cutting edges, whilst the top blade must be ground to sharpen the cutting edge. These blades give minimum distortion from full capacity down to as light as 2mm thickness.

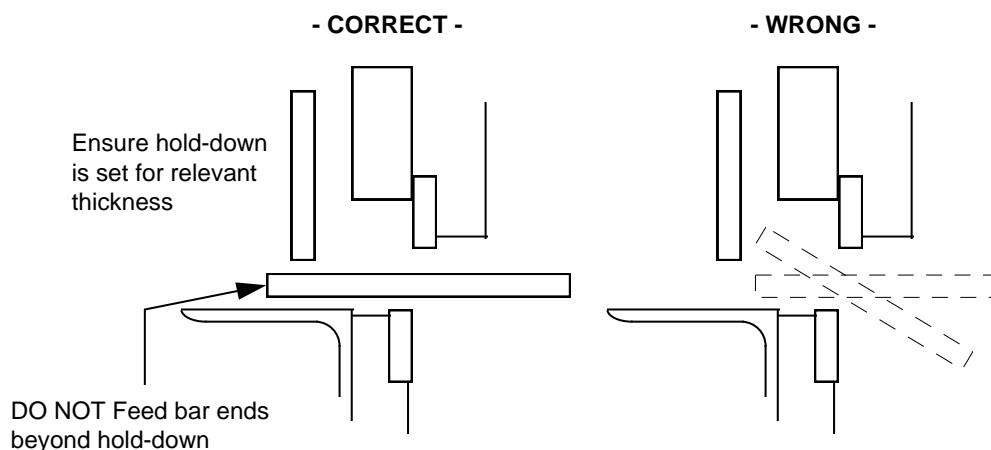
Parallel top blades can be supplied (Pt. No.3309) to order for cutting narrow bar widths or where flatness of cut is not so important.

When the shear blades require sharpening, grind only on the cutting faces - max. regrinding 0.80mm, after grinding the blades must be adjusted to a clearance of 0.10mm. Adjusting screws have been provided to reset the shear blades, the adjusting screws are positioned around blade fixing screws, accessible when shear table has been removed. Even clearance between top and bottom blades is important along the entire blade length and care should be taken to ensure that the bottom blade is in a vertical plane, parallel to top blade.

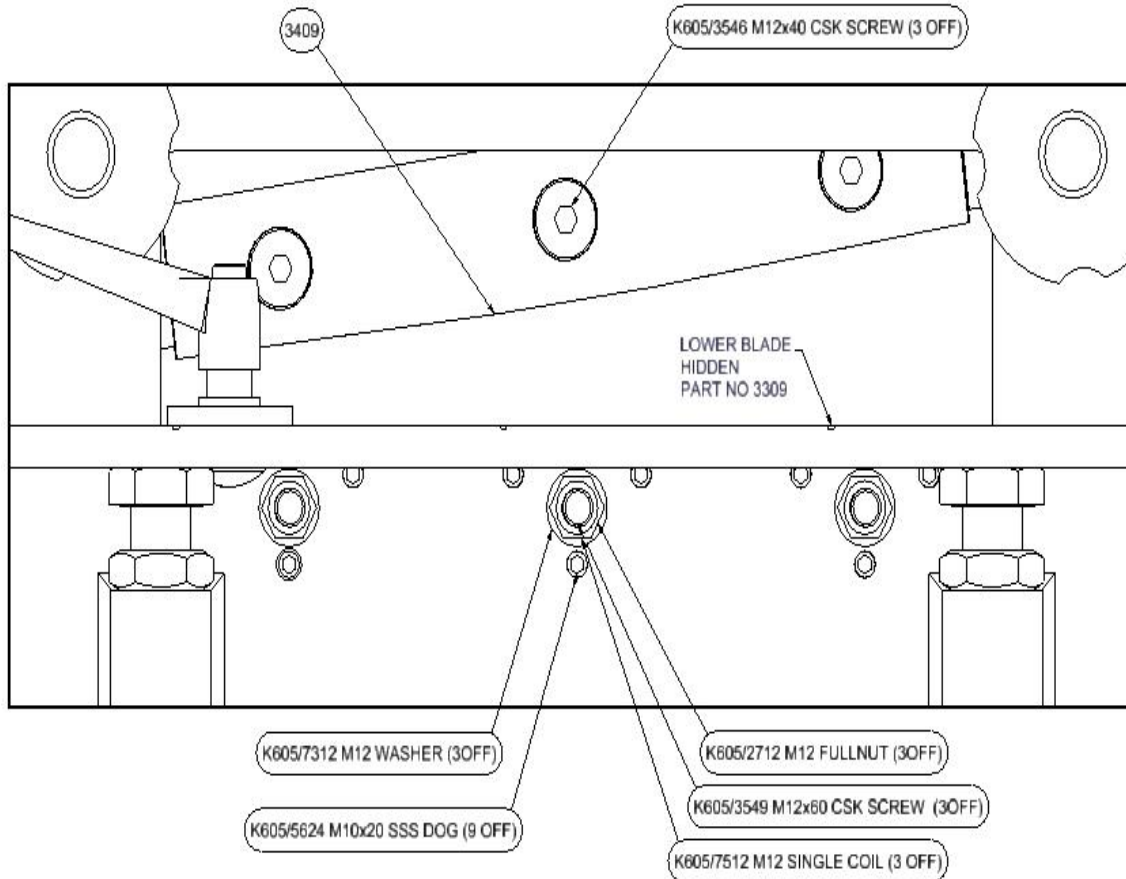
**WHEN ORDERING SPARE BLADES, ALWAYS QUOTE -  
MODEL, TYPE AND SERIAL NUMBER OF MACHINE.**

### SHEAR TOOLING - GENERAL GUIDES

1. The quality of the cut is an immediate indication of the condition of the blades.
2. Ensure hold-down is always set for relevant thickness of material being sheared.  
DO NOT allow ends of bars to be fed beyond the hold down, because bar would tend to twist between blades and cause body distortion.
3. Always feed material between blades from the hold down side.
4. Keep the blade area clean. Do not allow 'build up' of mill scale.
5. Stay within the rated capacity of the machine.



## SHEAR BLADE



## 7. ANGLE CUTTING

### DESCRIPTION

This working station provides large capacity angle cutting at 90 degrees and lighter angle cutting at 45 degrees.

To cut angle section, place the material through the hold down into the cutting area, adjust the support screw to the material but leave sufficient clearance to enable the section to be fed on for progressive cutting.

### **To mitre cut at 45 degrees:**

firstly cut the angles to length allowing apprx. 12mm oversize for end trimming.

1. Place the first end into the blade using the higher support position, trim approx. 6mm off the end of the section whilst maintaining 45 degrees to vertical position.
2. Place the other end into the blade using the left hand support position, trim section to length whilst maintaining 45 degrees to face of machine position.

To achieve other angles of cut between 45 degrees and 90 degrees, first cut the angle section to length and then trim the flange to required angle in the shear station.

The slot in the shear hold down allows angle sections to be positioned for left hand on right hand trimming, ensure hold down is set for relevant thickness.

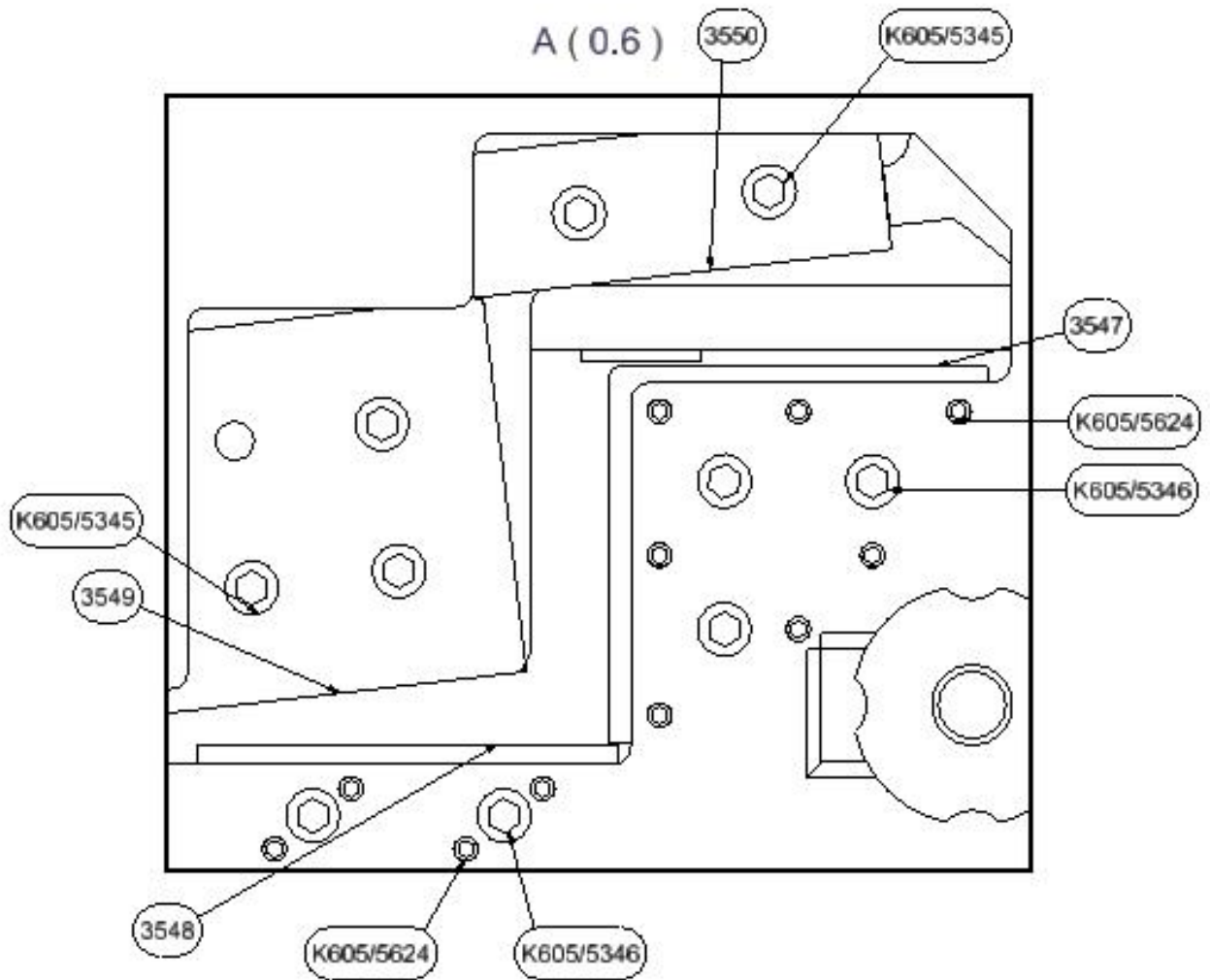
Each cutting blade has four cutting edges and is retained by simple fixing screws.

**DO NOT sharpen these blades, after turning four times replace with new blades.**

**WHEN ORDERING REPLACEMENT BLADES, ALWAYS QUOTE -  
MODEL, TYPE AND SERIAL NUMBER OF MACHINE.**

**ANGLE TOOLING - GENERAL GUIDES**

1. The quality of cut is an immediate indication of the condition of the blades.  
Keep sharp, keen cutting edges.
2. Ensure support screw is set for relevant thickness of material being cut.
3. Always feed material between blades from hold down side.
4. Keep cutting aperture clean, small slivers, short cuts and any other pieces should be removed from the blade area. DO NOT allow mill scale to 'build up' in the blade area.
5. Stay within the rated capacity of the machine.



## **8. SECTION CUTTING**

### **DESCRIPTION**

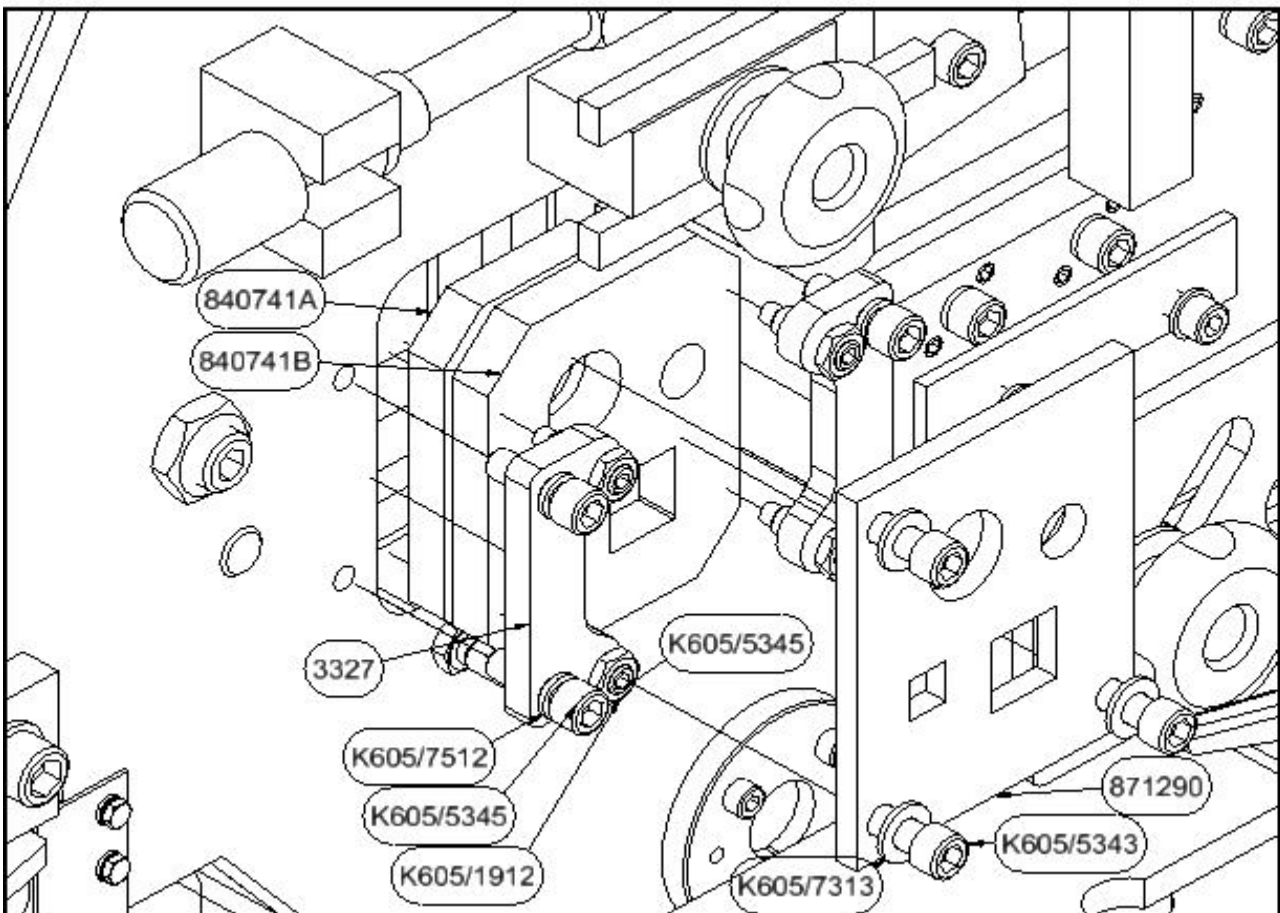
A variety of sections can be cropped at this aperture - round and square sections, unequal angle, channel, joist etc.

Blades for round and square section cropping are fitted as standard equipment and have apertures of varying sizes. The smallest aperture should be chosen, which will accept the material, thus ensuring a complete and well supported cut.

To change the blades, the material support must be removed. Release the four screws securing the blade clamps, remove blade clamps then withdraw the blades.

It will be noticed that the arm blade is smaller than the body blade.

This safeguards incorrect assembly when inserted carrier blades are used. Also notice the safety peg, there is a safety slot in the arm blade to prevent incorrect positioning.



### **To set blade clearance:**

Ensure arm blade is properly seated in shear arm.

Position body blade in frame firmly pushed against arm blade.

Secure blade clamp to frame.

Tighten the four SSS screws, then release each one 0,2 of a turn.

Tighten locknut whilst holding the SSS screw with allen key.

**IMPORTANT:**

- ⇒ Never remove screw fitted as safety peg in the arm blade milled recess.
- ⇒ In the case of worn solid blades, new blades must be fitted.  
DO NOT attempt to regrind faces; this makes blades undersize for secure fitting.
- ⇒ In the case of worn insert blades, new inserts can be supplied for grinding to worn sample.
- ⇒ When fitting new blades reverse the removal procedure.
- ⇒ The blade clamps are marked (RH) right hand and (LH) left hand, ensure they are replaced correctly.
- ⇒ To cut sections place the material through the hold down into the cutting area, adjust the hold down screw (if fitted) to achieve square cut.

**WHEN ORDERING SPARE BLADES, ALWAYS QUOTE-  
MODEL, TYPE AND SERIAL NUMBER OF MACHINE.**

**SECTION TOOLING - GENERAL GUIDES**

1. The quality of the cut is an immediate indication of the condition of the blades.  
Keep sharp, keen cutting edges.
2. Ensure bar sizes are used in smallest aperture that will accept them, ensuring well supported cut.
3. Always feed material between blades from hold down side.
4. Keep cutting aperture clean, small slivers, short ends and any other pieces should be removed from the blade area. DO NOT allow mill scale to 'build up' in the blade area.
5. Stay within the rated capacity of the machine.



## 9. NOTCHING STATION

### DESCRIPTION

The notching station has a rectangular punch as standard fitting and is supplied with a notch table complete with adjustable side and back stops which allow repetitive material positioning.

Vee notch tooling can be fitted at this work station, or alternatively units can be supplied for narrow widths of rectangular or vee shapes; units also available for bar end shaping.

A particular feature of this work station, provides for some punch end units to be fitted.

When notch punch requires sharpening, grind side and front faces of punch only.  
The dies have four cutting edges and should be turned to present new cutting edge.

### **To adjust dies after punch grinding:**

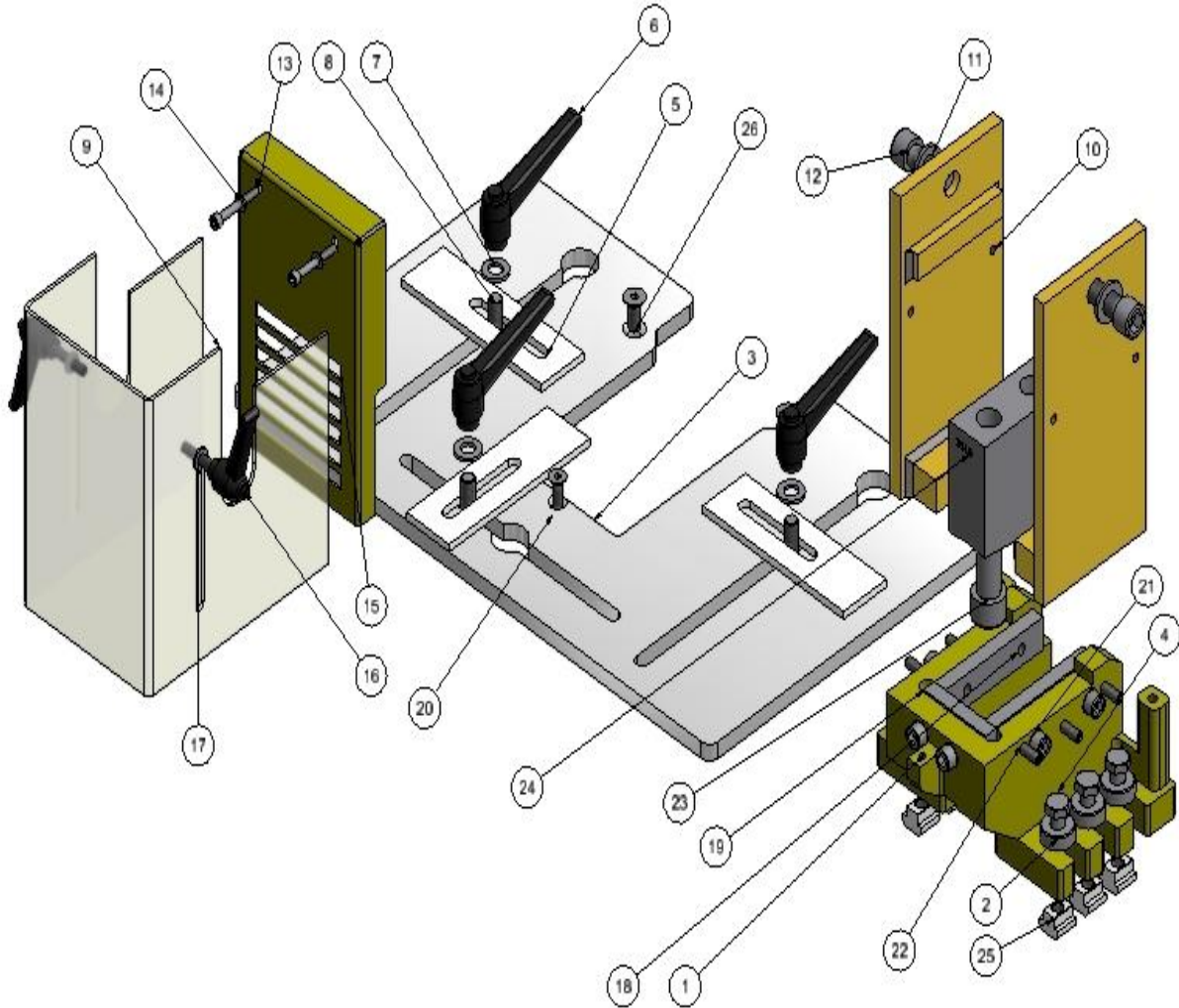
1. Slacken bolster fixing screws and position locking screws.
2. Move bolster into new side and front position on punch;  
one side of bolster is adjustable on the die.
3. Clearances between punch and die faces should be maintained as follows:  
.....at sides of punch 0.1mm  
.....at front of punch 0.3mm  
Adjust bolster on the two faces accordingly and retighten fixing screws -  
check clearances.
4. Release adjustable die blade fixing screws and adjust blade to punch,  
tighten fixing screws and check clearance.
5. Ensure fixing screws are tight and that the positioning locking screws have been reset.

**WHEN ORDERING SPARE PUNCHES AND DIES, ALWAYS QUOTE -  
MODEL, TYPE AND SERIAL NUMBER OF MACHINE.**

### NOTCHING TOOLING - GENERAL GUIDES

1. The quality of cut is an immediate indication of the condition of the tooling.  
Keep sharp, keen cutting edges.
2. Check that the notched blank ejects after notching operation, thus avoiding  
any 'build up' of slugs.
3. Stay within the rated capacity of the machine.

**RECTANGULAR NOTCH TOOLING ARRANGEMENT**



**RECTANGULAR NOTCH TOOLING ARRANGEMENT**  
**RECTANGULAR NOTCH PARTS LIST**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	6933	RECTANGULAR NOTCH BOLSTER
2	6	4443	12mm BOLSTER WASHER
3	1	4220	NOTCH TABLE
4	6	K605/3736	M12x55 HT BOLT DIN 931
5	3	2626	NOTCH/SHEAR GUIDE
6	3	K705/2000	M12 KIPP HANDLE
7	3	K605/7313	M12 WASHER DIN125A
8	3	K605/6130	M12x35 COACH BOLT DIN 603
9	1	6932	NOTCH END COVER
10	2	3322	NOTCH STRIPPER FINGER
11	2	K605/7316	M16 WASHER DIN 125A
12	2	K605/5355	M16x40 CAPSCREW DIN 912
13	2	K60/53140	M6 x 45 CAPSCREW DIN 912
14	2	K605/7305	M6 WASHER DIN 125A
15	1	4124	NOTCH END COVER
16	2	K705/1999	M8 KIPP HANDLE
17	2	K605/7307	M8 Washer DIN 125A
18	2	3537	RECTANGULAR NOTCH DIE
19	1	3536	RECTANGULAR NOTCH DIE
20	1	K605/3495	M8x30 CSK SCREW
21	6	K605/5334	M10 x 25 CAPSCREW DIN 912
22	6	K605/5617	M8x25 SSS DOG DIN 915
23	2	K605/5378	M20 x 90 CAPSCREW DIN 912
24	1	3310	NOTCH PUNCH
25	6	K605/2912	M12 * 14 TEE NUT
26	2	K605/3500	M10x25 CSK SCREW DIN 7991

**BAR BENDING FACILITY AT NOTCHING STATION**

Press Brake type tooling is available for fitting at the notching Station giving press brake capacity of 150mm x 12mm.

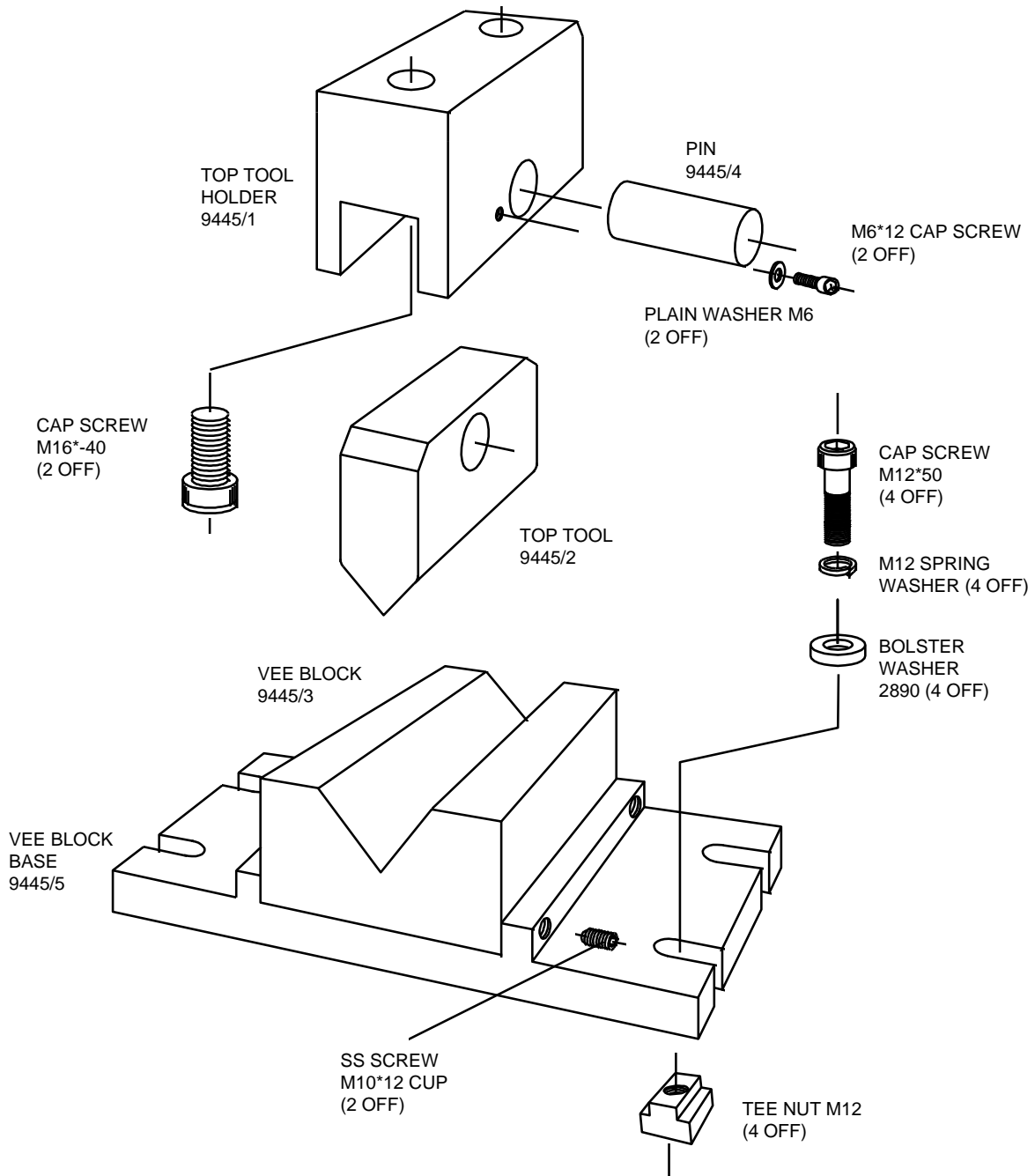
**IMPORTANT NOTICE - HEALTH & SAFETY AT WORK ACT, SECTION 6**

Bending tools must not be fitted to this machine until adequate safety measures have been implemented. It is normally permitted to use the bending tools without additional fixed guarding provided the following steps have been taken:

1. The clearance between the top tool and the work piece is kept to a minimum and must not exceed 6mm at any time.
2. The bending tool is set by a skilled and competent person.
3. A lockable cover has been fitted to prevent unauthorised alteration of limit switch.  
The key should be retained by the setter.

**BENDING TOOLS ARE SUPPLIED WITH SUITABLE COVER AND LOCK  
AS STANDARD**

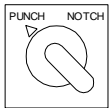
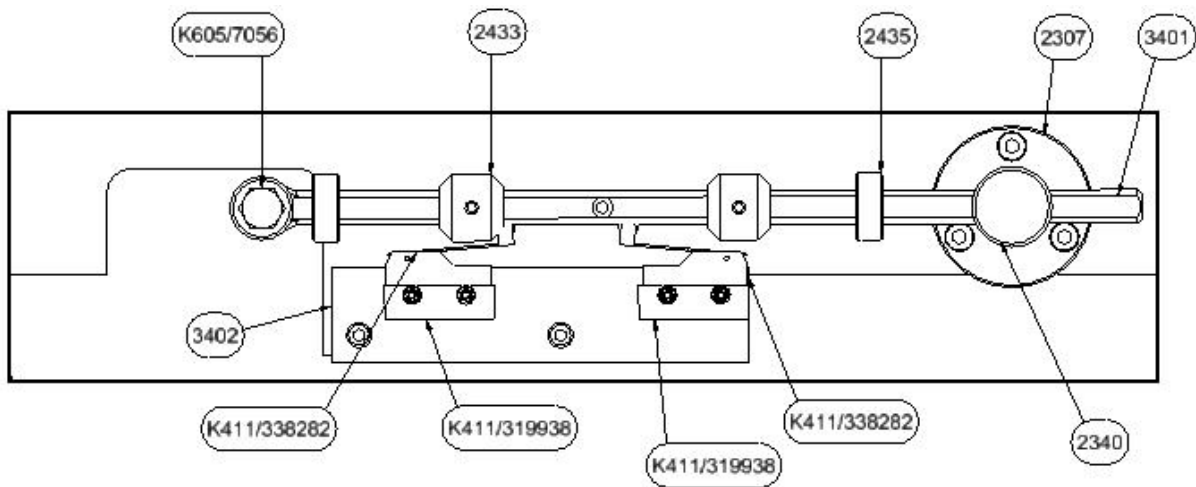
**BAR BENDING UNIT AT NOTCH END**



When bending always ensure work-piece is positioned central on VEE Block to avoid side loading ram. Air bending only. Adjust down stroke limit switch to avoid unnecessary pressuring of machine

Capacity: 150 \* 12 mm

## 10. STROKE ADJUSTMENT



Selecting PUNCH on control switch returns punch to top of stroke position.

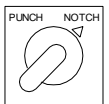
### **Re-adjustments**

Before making any positional adjustments of switch CHECK:

1. Pivot screw is locked securely.
2. Shaft support screws are secure.

Having checked above, reposition mounting plate as required.

Switches should be operated by actuators before hydraulic system “pressure“, (i.e. before cylinder piston reaches end of cylinder, full cylinder stroke length).



Selecting NOTCH on control switch returns notch / shear to open operating position.

### **Re-adjustments**

Switch selector to PUNCH and make adjustments as above.

**Note:** Adjustments to stroke limiters can be arranged by switching to the INCH mode of operation; the punch position and/or shear-cutting position is then set by operating the foot pedal to achieve position required. Adjust appropriate stop position, tighten stop screw; then re-check setting under NORMAL condition.

## **11. FURTHER INFORMATION**

### **CAPACITIES**

#### **Punching**

Rated Capacity	500 kN - 50T
Max. Capacities	23 x <b>15</b> mm
Dia. x Thickness	<b>38</b> x 9
Max. Stroke Length	55
Speed – 16 mm travel	26 full cycles/min
Throat Depth Standard	220
Largest Hole	110
Working Height	940
Max. Height UPN (web)	160
Max. Height UPN (flange)	102

#### **Shearing**

Flat Bar	200 x 15
Alternative	300 x 13
Blade Length	318
Angle Flange Trim	80 x 10
Working Height	940

#### **Angle Cutting**

At 90°	100 x 10
At 45° Mitre	70 x 6
Working Height	1,140

#### **Section Cutting**

Round/Square Bar	35/ 30
Channel Beam	102 x 51
Tee	76 x 10

#### **Notching**

Material Thickness	10
Width	42
Depth: Rectangular.	90
Depth: Vee	60
Angle Flange	90 x 10
Working Height	940

**SPECIFICATION**

Motor	3 KW
Nett Weight	1,250 Kg
Gross Weight	1,370 Kg
Machine Dims.	152 x 59 x 170 cm
Packed Dims.	166 x 77 x 190 cm

**ADDITIONAL TOOLING**

**Bending**

Max. Bar Size	150 x 12 mm
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**Punching at Notch Station**

Max. Capacity	20 x 12
Throat Depth	110

**Corner Notch**

Max.	150sq x 2
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**Tube Notch**

Max. Diam.	60
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## **12. HYDRAULIC SYSTEM**

A 3 KW Motor drives a hydraulic pump, which through control valves feed the power cylinder of the machine. The cylinder is connected to a pivoted arm.

Hydraulic Oil - refer to the recommended oils label. The oil filler/breather is positioned on the tank accessible by removing the louvred cover at base of the machine.

Suction Strainer - inspect oil strainer every twelve months. The strainer is accessible, having released the screws in tank cover, if necessary wash in paraffin (Replacement L820/5020).

Sludge Tray - whilst lower cover is removed, check tray located under main frame once every twelve months.

### **CLEANING**

Under normal operation, all visible working parts should be regularly cleaned of foreign matter, thus preventing excessive wear and possible failure.

### **REGULAR MAINTENANCE**

- Daily** - Before starting machine -  
Check fluid level in tank - top up as necessary.  
Check oil level in oil pump - top up as necessary.  
Check condition of all blades, punch and die.  
Check surrounding work area is tidy, remove any off-cuts, slugs from floor area.  
Clean off any mill scale which may have collected around the cutting apertures.
- Weekly** - But depending on work load  
Examine power cable and foot pedal cable for damage or chafing.  
Check movement of machine is smooth when running under no load condition.
- Monthly** - Check arm adjustment for any slackness.
- Yearly** - Change hydraulic fluid, inspect oil suction strainer.

### **HYDRAULIC FLUID**

Fill to top level of inspection glass. Use only mineral oil as recommended or equivalent.

Castrol	Hyspin AWS32-6018
B. P.	Energol HLP32
Shell	Pollus 37
Mobil	DTE 24
Esso	Nuto H32

### **OILING LUBRICANT**

Check oil level in pump reservoir daily, operate pump 2/3 times daily.

Castrol	Magna DR 220
Shell	Tomma T220
B.P.	Energol GHI 220
Mobil	Vactra Oil No. 4
Esso	Febis K220

### **Lubricant Check**

Before operating machine, the following important checks should be made.

- The Hydraulic fluid is at top level of inspection glass.
- The oil pump has been operated, and that there is oil pressure indicated, check oil level in pump.

### 13. MACHINE ARM ADJUSTMENT

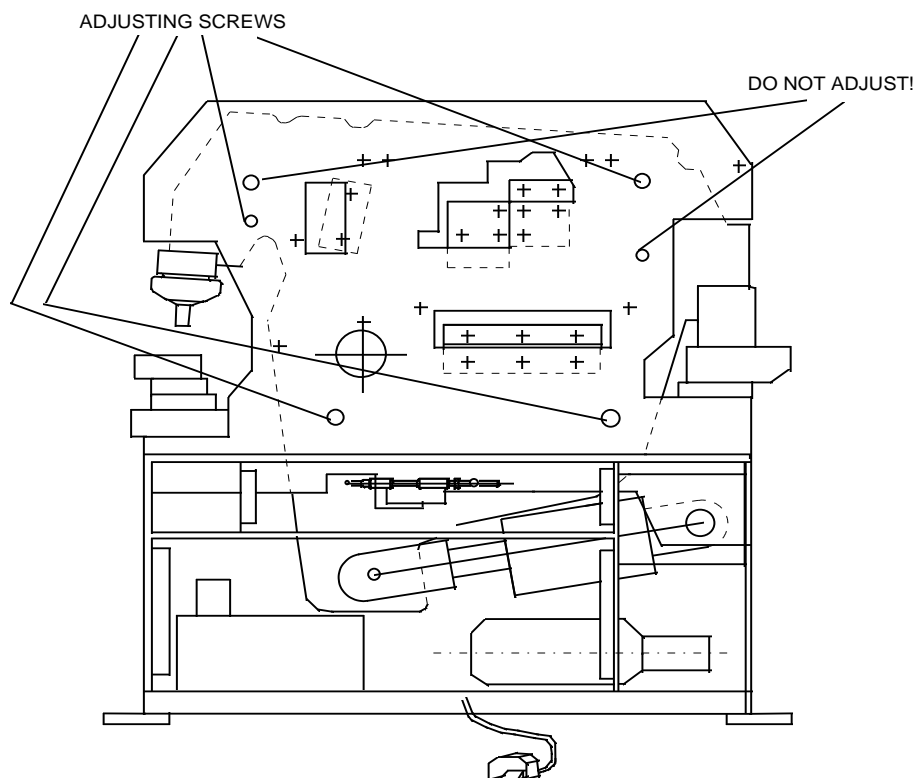
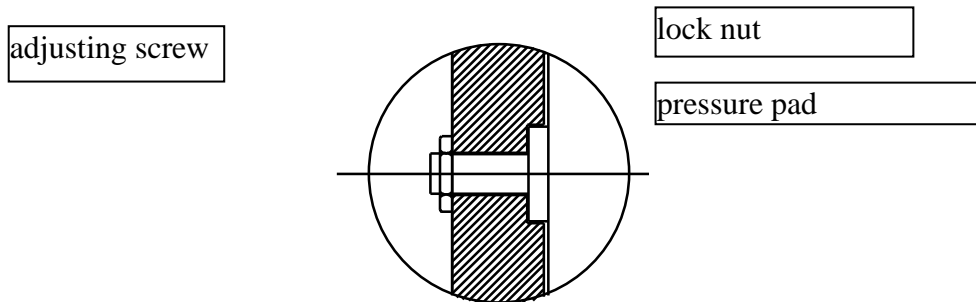
The Shear Arm is adjusted by four 24mm Socket Set Screws which apply pressure to the Internal Bronze Pressure Pads. These are located on the Feed (Hold Down) Side of the machine as shown in the figure below.

#### Adjusting Arm

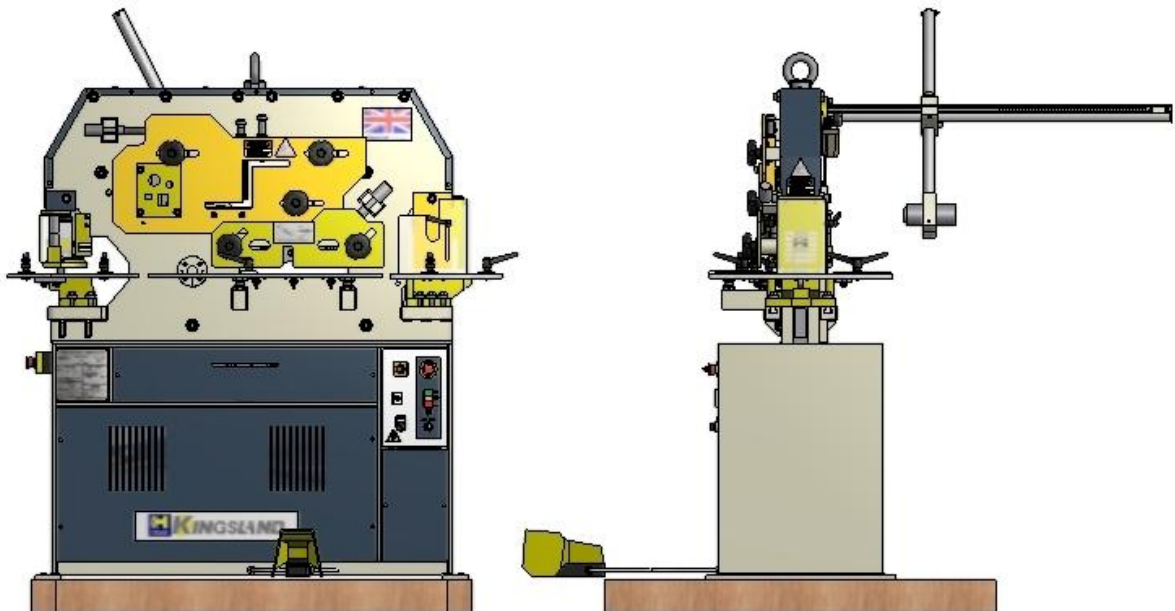
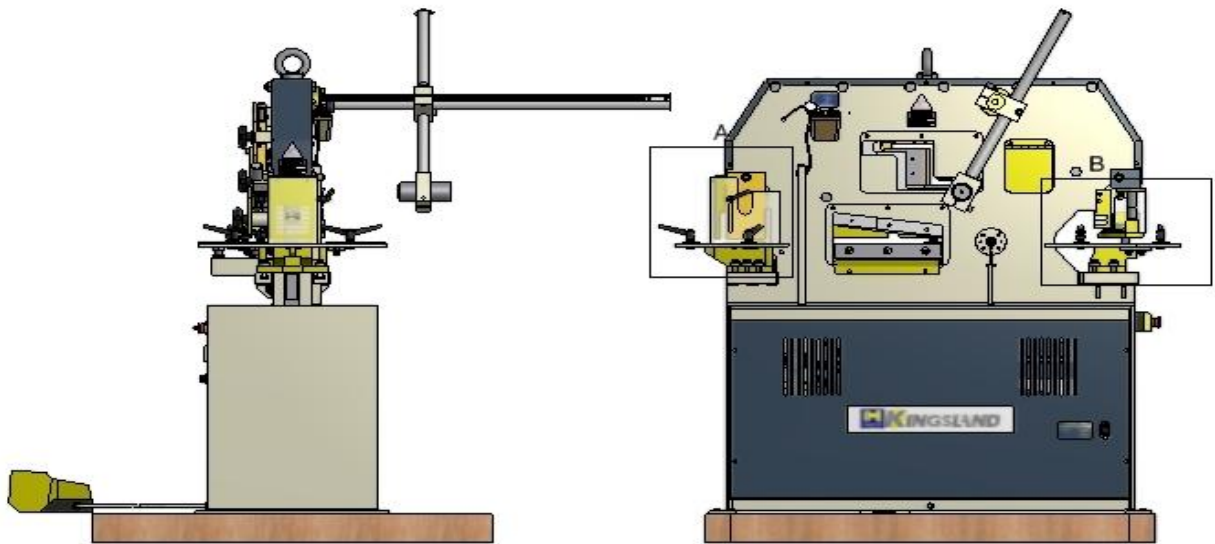
Isolate machine before making any adjustments.

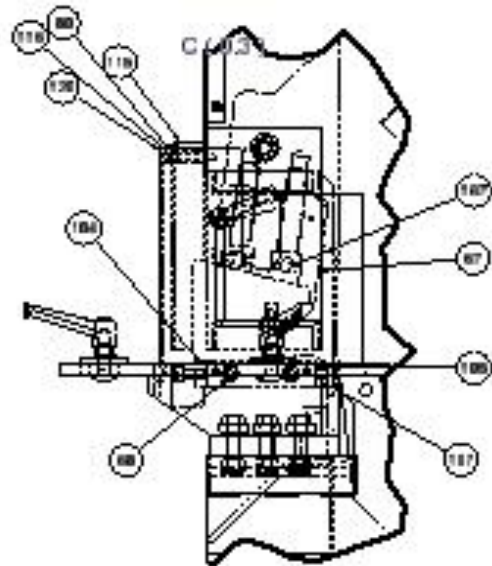
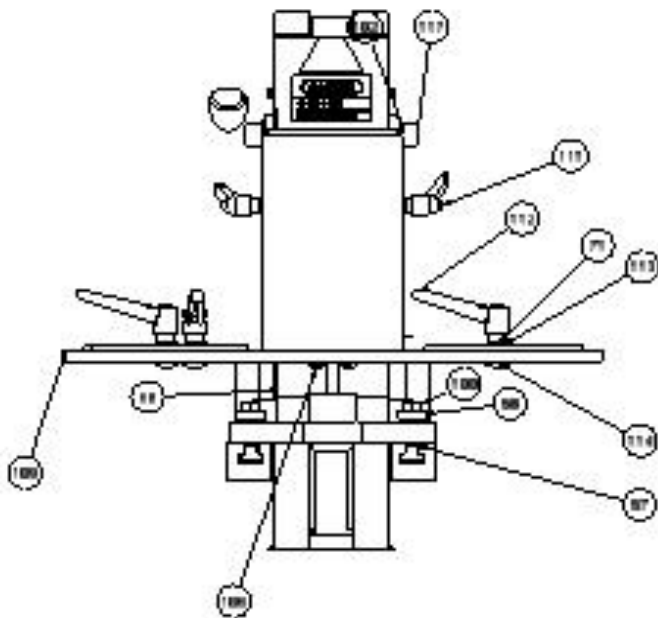
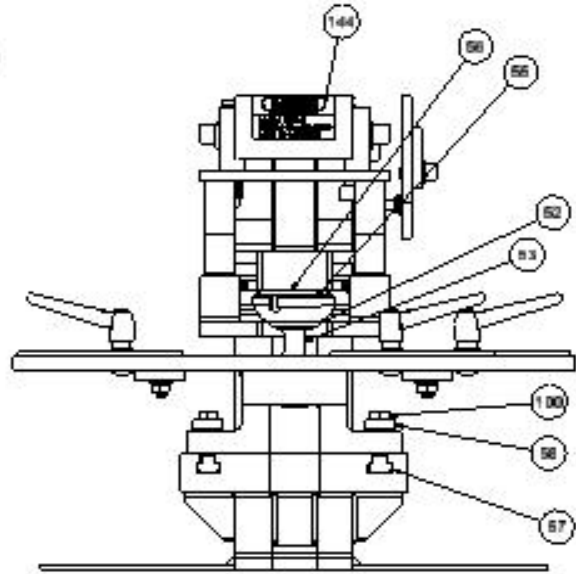
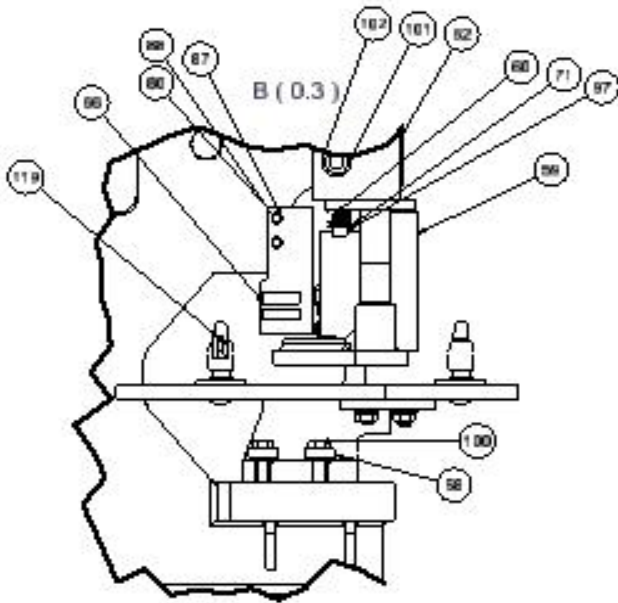
1. Slacken locking nuts at the four pad positions only (M24 lock nuts).
2. Turn adjusting screws clockwise until slight resistance is felt.
3. Tighten lock nuts and test movement of arm.

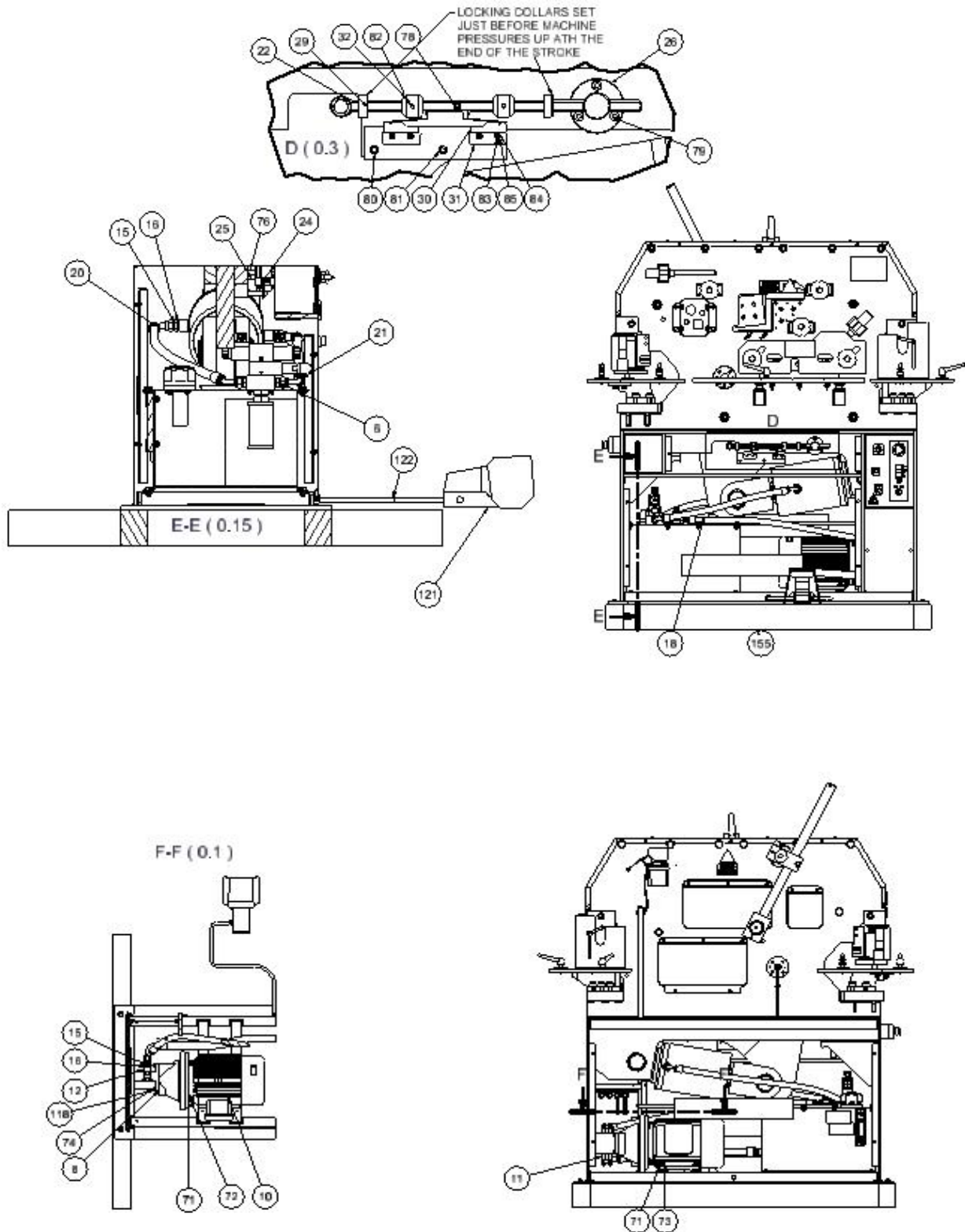
N. B. The arm should be adjusted prior to any adjustment of the shear blade.

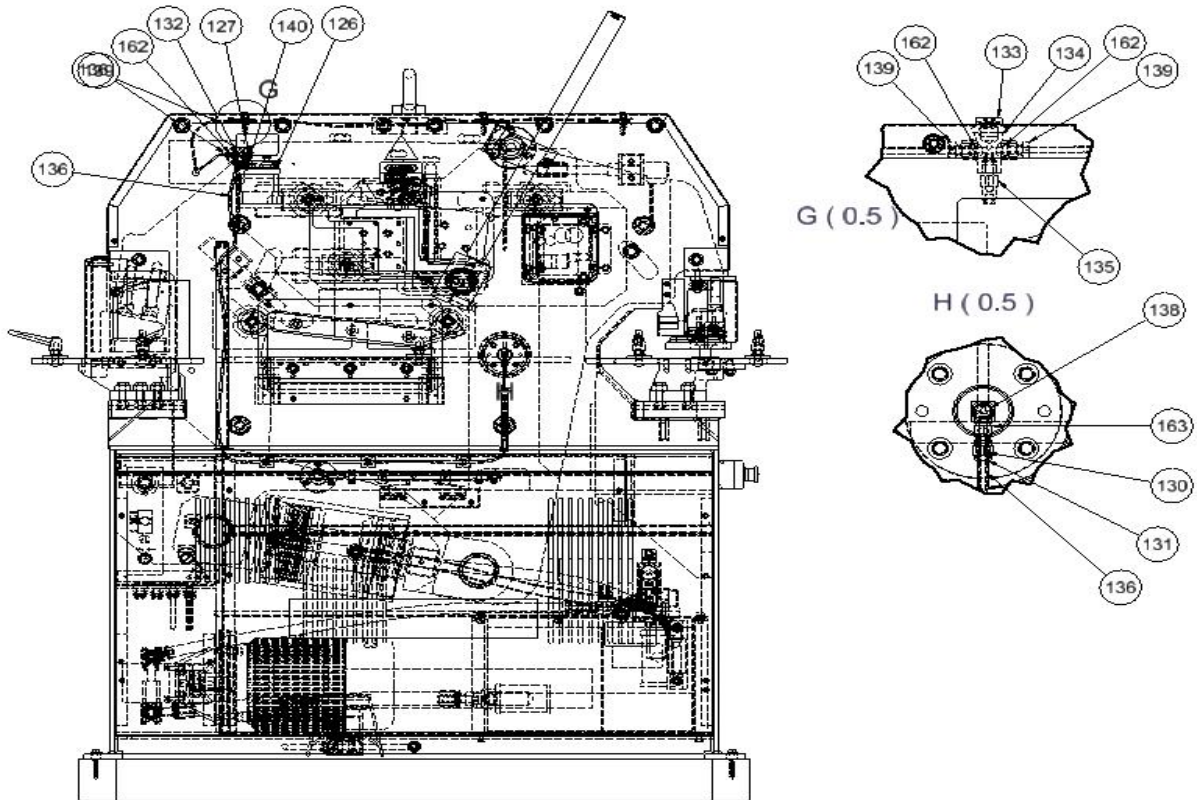
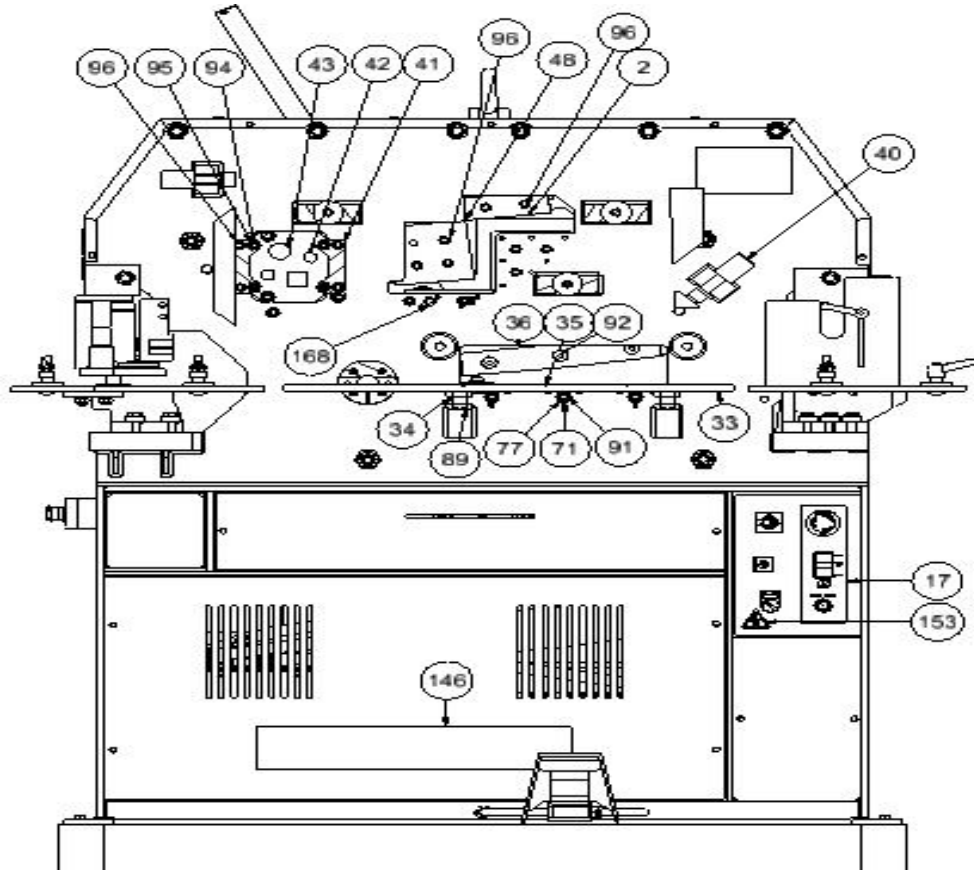


**14. PARTS LIST**









**1st stage fitting**

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
26	4	K605/2720	FULL NUT M20
27	4	K605/7080	Hex-Head Bolt M20 x 140
28	2	K605/7074	Hex-Head Bolt M20 x 120
29	4	2258	SHEAR ARM PRESURE PAD
30	1	3283	LOWER PANEL
31	1	3289	CLEVIS
32	2	3292	CYLINDER PIN
33	2	6849	LOCKING RING FOR MAIN PIVOT
34	1	6848	MAIN PIVOT
35	1	3366	LIMIT SWITCH COVER
36	1	3418	FRONT LOUVRE COVER
37	1	3419	REAR LOUVRE COVER
38	4	K605/15380	CIRCLIP 70MM EXT
39	4	K605/5681	S S S DOG M24 x 50
40	4	K605/1924	M24 LOCKNUT DIN 439
41	20	K605/5624	S S S DOG M10 x 20
42	8	K605/5324	Cap Screw M8 x 25
43	1	ZX3234	*CYLINDER COMPACT 60
44	1	K605/5522	S S S CUP M10 x 30
45	1	6899	
46	1	6903	SHEAR ARM
47	1	6905	TOP COVER
48	6	3435	TOP SPACER
49	1	3445	PIVOT BUSH

	R1	General Tolerance Plate Thickness	± 0.1 mm	6902
	<b>KINGSLAND</b> Engineering			
Drawn By	MB	Checked by	MB	Quantity
Date	26.06.13	Material	COMPACT 50	1 OFF
Part No.	11	Page No.	2/2	
1st STAGE FITTING				

When ordering spares always quote model, type and Serial Number of Machine.

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	6902	1ST STAGE FIT COMPACT 50
2	1	3550	ANGLE BLADE arm
4	1	3548	ANGLE BLADE body
6	1	6906	HYDRAULIC ASSEMBLY
7	1	L820/2013	PUMP COUPLING SET G228/ZF/80-KE-COUPLING+SPIDER
8	1	L820/1012	BELLOUSING L25-OU/014
9	1	L910/55000	GP2G-10-5R04 B100 PUMP
10	1	K405-3006	3KW 230-400V EURO VOLT MOTOR
11	1	L820/1010	ELBOWS 2GB 34(3/4")
12	1	L820/1000	ELBOWS 1GB 12(1/2")
13	1	L820/2523	3/4" x 3/4"BSP mm Adapter
14	1	L820/3520	3/4" BONDED WASHER
15	3	L820/2515	1/2" x1/2" M/M Adapter
16	3	L820/3515	1/2" BONDED WASHER



17	1	K410/1036	ELECTRIC BOX
18	1	3873	HYDRAULIC HOSE PUMP TO MANIFOLD
19	1	3872	HYDRAULIC HOSE TANK TO PUMP
20	1	3875	HYDRAULIC HOSE MANIFOLD TO CYLINDER
21	1	3874	HYDRAULIC HOSE MANIFOLD TO CYLINDER
22	1	3401	ACTUATOR SHAFT ASSEMBLY
23	1	3402	LIMIT SWITCH PLATE
24	2	3403	TUBE
25	3	3404	TUBE
26	1	2307	SHEAR LIMIT SWITCH SHAFT SUPPORT
27	1	2340	SHAFT SWIVEL
28	1	2434	BOSS ADJ COLLAR
29	2	2435	ROD FIXED STOP
30	2	K411/338282	MICROSWITCH MKV11D40
31	2	K411/319938	MICRO SWITCH COVER 319-938
32	2	2433	LIMIT SWITCH ACTUATOR
33	1	3485	SHEAR TABLE
34	4	2732	SHEAR SUP' ADJUST SCREW
35	1	3309	SHEAR BLADE BODY
36	1	3409	SHEAR BLADE ARM
38	2	3977	SHEAR ANGLE APERTURE COVER
39	1	3320	SHEAR HOLD DOWN
40	1	2079	HOLD DOWN ADJ' SCREW
41	2	3327	BLADE RETAINING PLATE
42	1	840741B	KNIFE
43	1	840741A	KNIFE
44	5	K705/2015	M16*30 4 LOBE HANDWHEEL 73280
45	5	K605/7318	BS3410 5/8" Washer
46	1	3976	SECTION APERTURE COVER
47	1	3547	ANGLE BLADE body
48	1	3549	ANGLE BLADE arm
49	1	7760	ANGLE SECTION HOLD DOWN ASSEMBLY
50	1	6883	HOLD DOWN ADJUSTING SCREW
51	1	4221	PUNCH BOLSTER
52	1	9036	PUNCH ADAPTOR FOR 9004
53	1	9004 22mm	ROUND PUNCH
54	1	9023-23	23MM ROUND DIE
55	1	2557	RETAINING RING
56	1	2093	RAM PRESSURE PLATE
57	10	K605/2912	M12 * 14 TEE NUT
58	10	4443	12mm BOLSTER WASHER
59	1	1090	SWING AWAY STRIPPER ASSEMBLY
60	1	K705/3006	ENTEX 130 COMPRESSION SPRING
61	1	2887	STRIPPER TOP PIVOT SLEEVE
62	1	3552	PUNCH STRIPPER MOUNTING BLOCK
63	1	3553	PUNCH STRIPPER MOUNTING BLOCK
64	1	K605/0020	M10*50MM STUD DIN6379-M12-50
65	1	K605/1005	DIN 6303-M10-A KNURLED NUT
66	1	4126	PUNCH END REAR GUARD
67	1	3310	NOTCH PUNCH
68	1	6933	RECTANGULAR NOTCH BOLSTER

69	6	K605/7307	M8 Washer DIN 125A
70	4	K605/3920	M8x16 BLK SET SCREW DIN 933
71	20	K605/7313	M12 WASHER DIN125A
72	4	K605/70451	Hex-Head Bolt M12 x 40 DIN 933
73	4	K605/7044	Hex-Head Bolt M12 x 30 DIN 933
74	4	K605/5325	M8 x 30 CAP SCREW DIN 912
75	1	K605/1523	CIRCLIP 19MM EXT
76	1	K605/7056	Hex-Head Bolt M12 x 120 DIN 931
77	4	K605/2712	M12 FULLNUT DIN 555
78	2	K605/5310	M6 x 12 CAPSCREW DIN 912
79	3	K605/5327	M8 x 45 CAP SCREW DIN 912
80	50	K605/7305	M6 WASHER DIN 125A
81	2	K605/5315	M6 x 50 CAP SCREW DIN 912
82	5	K605/5510	M8X8 SSS DOG DIN 913
83	4	K605/52502	M4 x 30 CAP SCREW DIN 912
84	8	K605/5103	2BA WASHER
85	4	K605/7704	4MM SHAKEPROOF WASHER DIN6797
86	4	K605/2701	M4 FULL NUT DIN 555
87	38	K605/6908	M6 x 12 HEX HEAD BOLT DIN 933
88	36	K605/7706	6MM SHAKEPROOF WASHER DIN 6797
89	4	K605/1924	M24 LOCKNUT DIN 439
90	16	K605/7512	M12 SPRING WASHER DIN 7980
91	3	K605/3549	M12x60 CSK SCREW DIN 7991
92	3	K605/3546	M12x40 CSK SCREW DIN 7991
93	4	K605/3543	M12x30 CSK SCREW DIN 7991
94	4	K605/1912	M12 LOCKNUT DIN 439
95	4	K605/5636	S S S DOG M12 x 40 DIN 915
96	9	K605/5345	M12 x 35 CAPSCREW DIN 912
97	1	K605/5337	M10x40 CAPSCREW DIN 912
98	4	K605/5323	M8 x 20 CAPSCREW DIN 912
99	1	K605/5531	S S S CUP M12 x 25 DIN 916
100	10	K605/3736	M12x55 HT BOLT DIN 931
101	2	K605/5356	M16 x 45 CAPSCREW DIN 912
102	4	K605/7316	M16 WASHER DIN 125A
104	1	3536	RECTANGULAR NOTCH DIE
105	2	3537	RECTANGULAR NOTCH DIE
106	6	K605/5334	M10 x 25 CAPSCREW DIN 912
107	6	K605/5617	M8x25 SSS DOG DIN 915
108	2	3322	NOTCH STRIPPER FINGER
109	1	4220	NOTCH TABLE
110	2	K605/3500	M10x25 CSK SCREW DIN 7991
111	2	K705/1999	M8 KIPP HANDLE
112	4	K705/2000	M12 KIPP HANDLE
113	4	2626	NOTCH/SHEAR GUIDE
114	4	K605/6130	M12x35 COACH BOLT DIN 603
115	1	4124	NOTCH END COVER
116	2	K60/53140	M6 x 45 CAPSCREW DIN 912
117	2	K605/5355	M16x40 CAPSCREW DIN 912
118	4	K605/7508	M8 SPRING WASHER DIN 7980
119	1	890323	PUNCH TABLE ASSEMBLY
120	1	6932	NOTCH END COVER

121	1	K410/7009	FOOTPEDAL SWITCHES
122	1	K705/1010	3/8" BORE TUBE HN 45 CLEAR BRAIDED PVC TUBE
123	2	K411/607904	CORD GRIP BUSHES M20
124	1	K411/607926	M20 LOCKNUT
125	1	K411/607926-2	LOCK NUT FOR CORD GRIP BUSH
126	1	bijur pump	BIJUR PUMP C2988C 2CC SHOT PUMP
127	1	1-8 90 elbow	1/8" ELBOW 90 DEGREES
128	1	B-3150	4 WAY TEE CONNECTOR BIJOR
130	3	B-1061	4MM OLIVE 2-SIDED
131	1	B-1095	NUT
132	1	AC-118	PRESSURE GAUGE 4 BAR REAR ENTRY
133	4	AR-1024	1/8" BSP PLUG
134	3	B-1504	4 WAY CONNECTOR
135	3	B-2495	BEJUR FJB-0 METER UNIT
136	4	K715/6010	4mm LUB PIPE
137	3	K411/398521	PIPE SLEEVING
138	1	A-2768 b	1-8 90 elbow M - F
139	7	B-1371	COMPRESSION FITTING 4MM
140	1	L820/2400	1/4" BSP MALE TO 1/4" BSP FEMALE
141	1	L205/2026	Sticker LUBRIFICATION
142	4	L202/5024	Sticker-DANGER TRIANGLE
143	2	L205/2028	Sticker HYDRAULIC FLUID
144	4	L205/2025	Sticker-DANGER
145	1	L205/2016	Sticker MOTOR DIRECTION
146	2	L205/2011	Sticker-HACO KINGSLAND logo
147	1	K410/6080	Sticker MADE IN BRITAIN
148	1	K411/333653	MUSHROOM PUSHBUTTON
149	1	K705/2705	Plastic plug 20x20
150	1	L205/2015	Sticker DOLD-DOWN
151	1	L205/1402	Capacity plate COMPACT 65
152	1	L205/2005	Sticker IMPORTANT
153	1	L205/2014	Sticker LIGHTNING TRIANGLE
154	4	K605/4205	BRASS HAMMER DRIVE SCREW No4*1/4 BS4174
155	4	E185/1505	100x75x1200 SAWN WOODEN BEARER
156	4	K605/6129	M10x90 COACH SCREW DIN 571
157	3	K410/543901	STICK ON BASES 543-901
158	3	K411/543428	2.5MM CABLE TIE
159	2	K411/489419	CAP KIT 489-419
160	1	L810/1015	RUBBER MATT 4'x1/8"
161	1	1024	1 METRE LENGTH STOP ASSEMBLY
162	5	B-8272	4MM OLIVE
163	1	B-1083	METER VALVE FSA0
164	1	K605/3490	M8x20 CSK SCREW DIN 7991
167	2	K605/5378	M20 x 90 CAPSCREW DIN 912
168	5	K605/5346	Cap Screw M12 x 40
169	1	3478	SHEAR CHUTE

**15. CIRCUITS**

**HYDRAULIC CIRCUIT**

**PARTS LIST**

ITEM	DESCRIPTION	QUANTITY
1	CYLINDER ZX32347	1
2	FLEXIBLE PIPE 3875	1
3	FLEXIBLE PIPE 3874	1
4	DIRECTIONAL CONTROL VALVE L820/4510DC	1
5	PRESSURE RELIEF VALVE L820/45350	1
6	PRESSURE GAUGE	1
7	4KW MOTOR K405/4230	1
8	DRIVE COUPLING L820/2013	1
9	SUCTION STRAINER L820/5020	1
10	11cc PUMP L910/550013	1
11	DIFFUSER L820/5030	1
12	TANK 3464	1
13	FLEXIBLE PIPE 3872	1
14	FLEXIBLE PIPE 3873	1

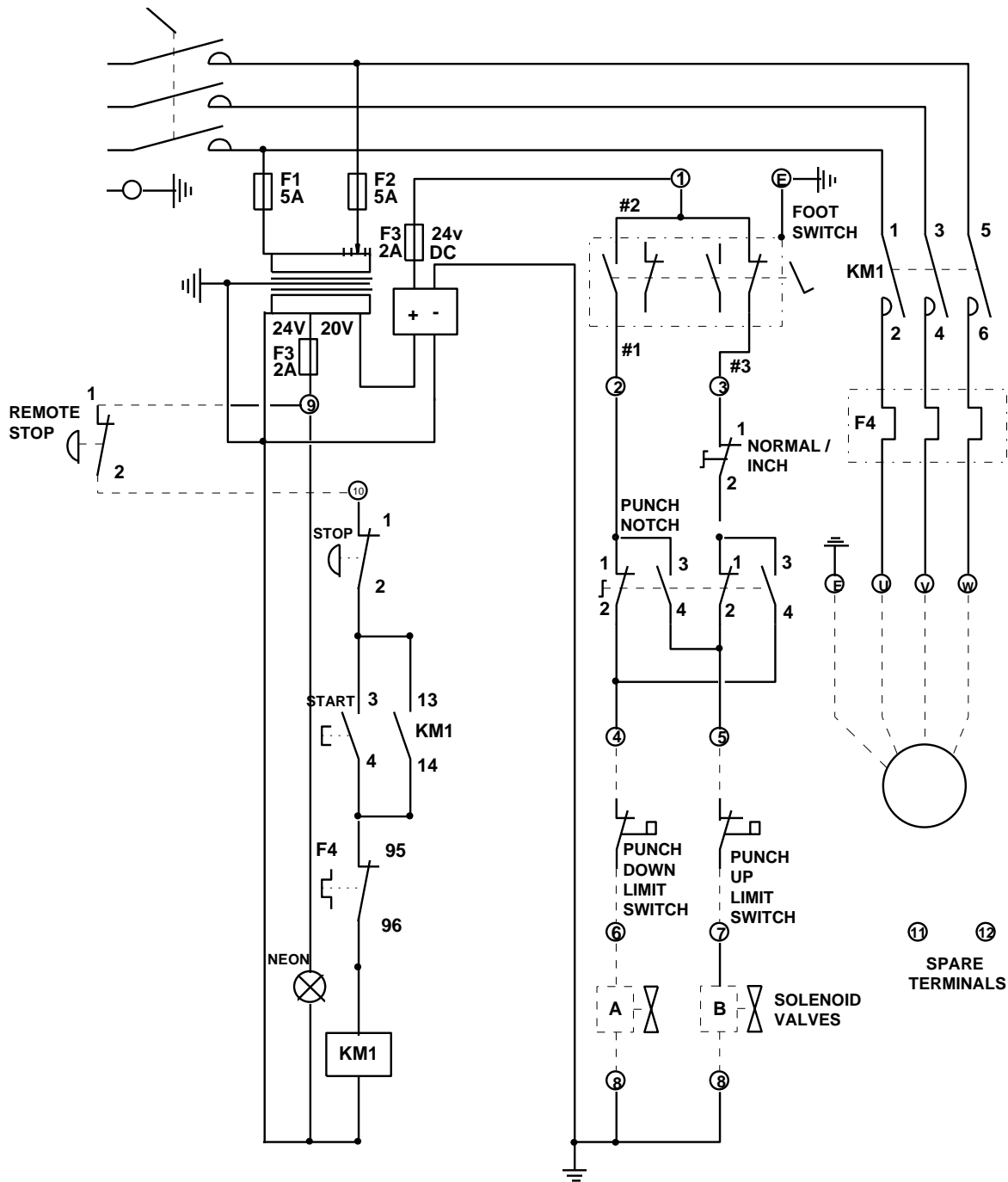
THE PRESSURE GAUGE MUST ONLY BE USED FOR POWER PACK SETTING AND SERVICING REMOVE GAUGE AFTER USE AND REPLACE WITH BUNG.

TANK CAPACITY 40 LITRES  
SEE TANK FOR RECOMMENDED FLUIDS

THE SERIAL NUMBER OF THE MACHINE MUST BE QUOTED WHEN ORDERING HYDRAULIC SPARES

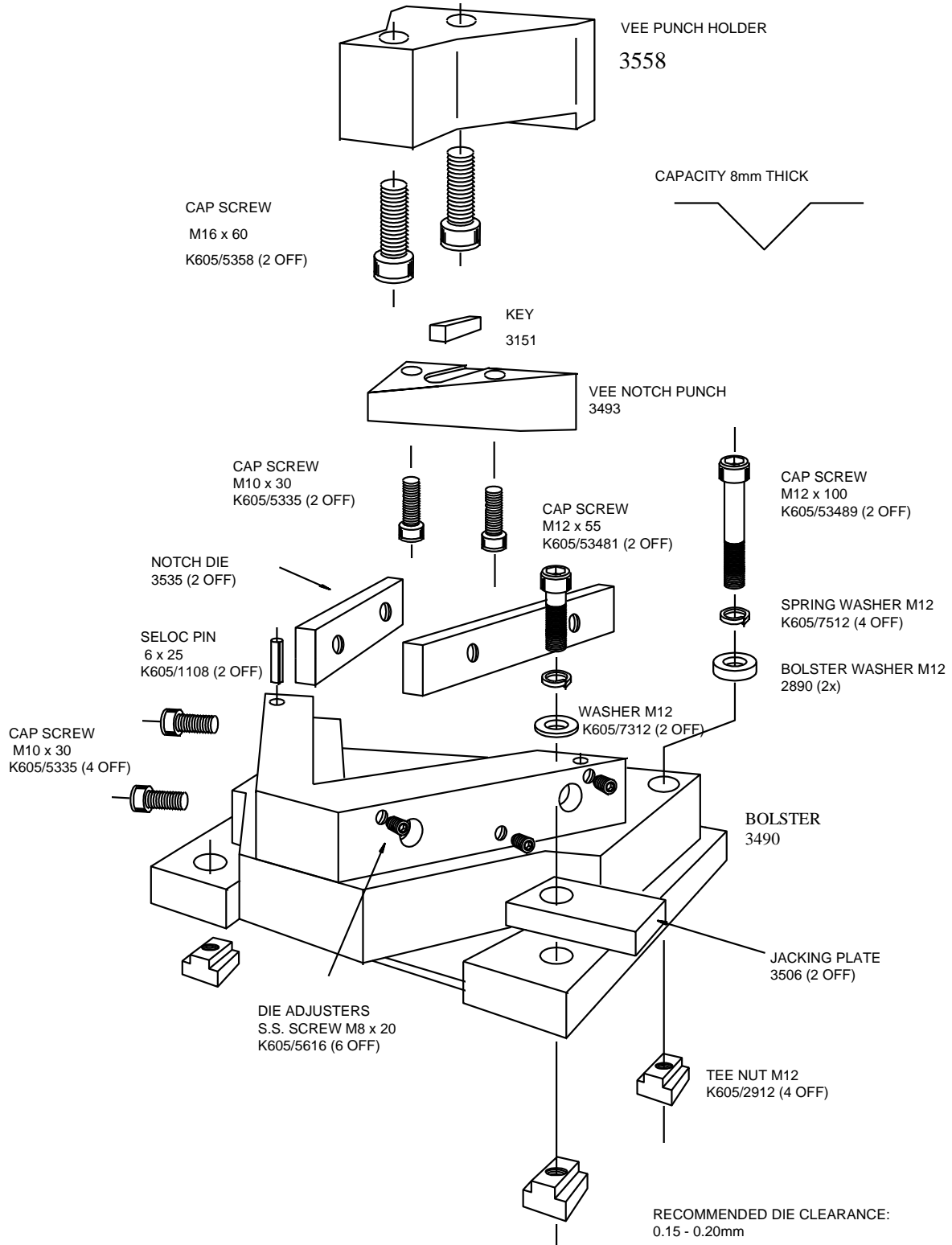
MR.	Qty.	Sh.	DESCRIPTION	6909
	R1		General Tolerance ±0.1 mm. Plate Thickness #=	
Drawn by	MIB		<b>KINGSLAND</b>	Assem. Nr. ---
Datum	23.07.13		Engineering	Weld Nr. ---
Scale	1:1			Blank Nr. ---
Checked by	MIB		HYDRAULIC	JIG Nr. ---
Machine type	COMPACT 65		CIRCUIT	Quantity 1 OFF
Page N°	1 / 1			Material
Serie Nr. Machine				
<p style="font-size: small;">Dit plan blijft eigendom van HACO en kan teruggevraagd worden. Kopieën stelt bloot aan gerechtelijke vervolging. Ce plan est la propriété de HACO et peut être réclamé. Copie expose à des poursuites judiciaires. This drawing remains HACO property and can be reclaimed back. Copying is liable to legal proceedings. Diese Zeichnung bleibt HACO Eigentum und kann zurückgefordert werden. Kopierzwicken zehrt eine gerichtliche Verfolgung noch sich.</p>				

**ELECTRICAL CIRCUIT**



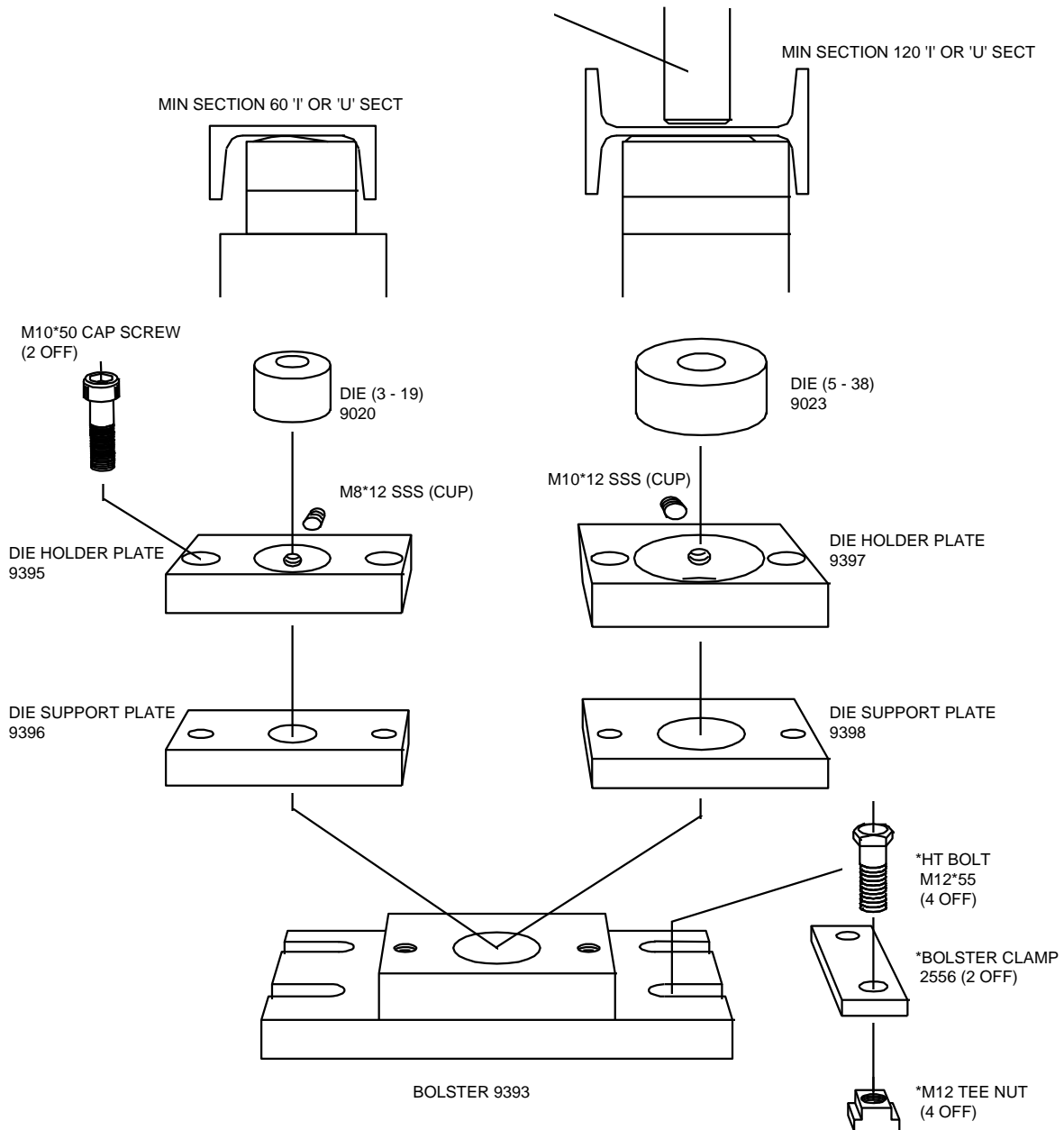
**16. SPECIAL TOOLING**

**90° VEE NOTCH TOOLING ARRANGEMENT**



**WEB PUNCHING ARRANGEMENT FOR 'I' & 'U' SECTIONS**

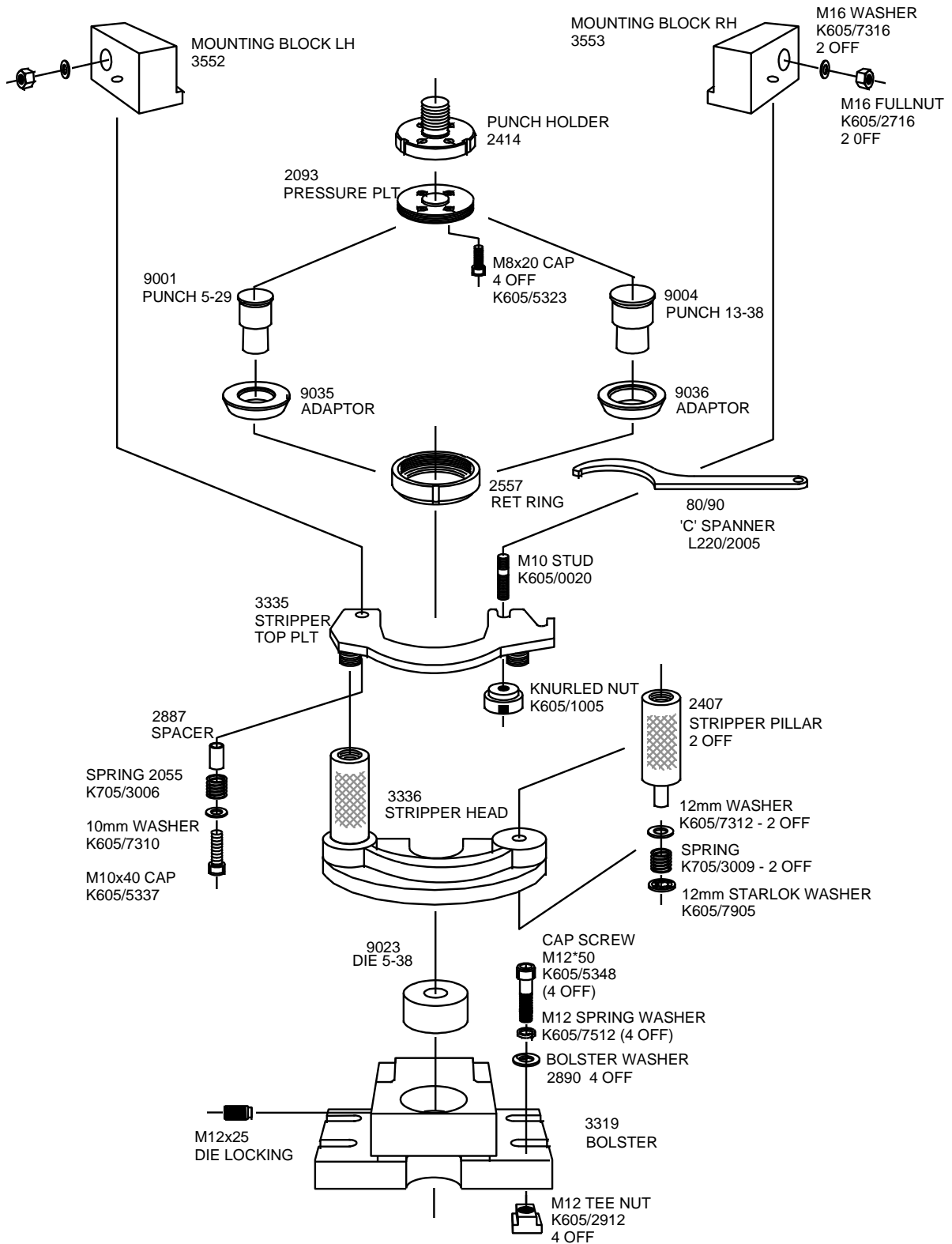
WHEN PUNCHING 'I' SECTION  
REMOVE STD STRIPPER HEAD ASSY  
FIT SPEC EXTENDED PILLARS 87140  
WITH M20 LOCKNUTS



NOTE: PUNCHES AND DIES NOT INCLUDED WITH UNIT

\* THESE ITEMS ARE FROM STANDARD PUNCH BOLSTER ASSY

**NOTCH END PUNCHING**





**17. SOUND LEVEL TEST**
**MAX. SOUND PRESSURE LEVEL**
**RESULT SHEET**

**Test Site:** Weybourne Road, Sheringham, NR26 8HE  
**Date:** 29.10.2014  
**Monitoring Equipment:** RS 292 + RS 294

MACHINE UNDER TEST	MONITORING POSITION	TIME IN USE	5 min. LEQ	MAX SPL	MIN SPL	AVG SPL	COMMENTS
Kingsland Compact 50	1M	-	-	76.2 dB	-	-	-